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THESIS

NAVY DELAYED ENTRY PROGRAM
ATTRITION ANALYSIS

by

Margaret Mary Murray

June 1985

Thesis Advisor: Ray A. Zimmerman
Co-Advisor: Thomas S. Swenson

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* Navy Delayed Entry Program Attrition Analysis		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis; June 1985 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Margaret Mary Murray		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93943-5100		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93943-5100		12. REPORT DATE June 1985 13. NUMBER OF PAGES 118
14. MONITORING AGENCY NAME & ADDRESS*(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* Unclassified 15a. DECLASSIFICATION/ DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution is unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Delayed Entry Program (DEP)
Attrition Analysis
Navy Recruiting
Predicting DEP Attrition
DEP Attrition
Navy DEP Attrition
Recruiting

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This study was conducted to identify various personal and organizational predictors of Navy enlisted personnel Delayed Entry Program (DEP) attrition. Every non-prior service male recruit who entered DEP in Fiscal Years 1980 through 1983 was tracked for 12 months from initial enlistment, to determine if he accessed or attrited from the Delayed Entry Program. Five models predicting attrition were developed, using

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S N 0102-LF-014-6601

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logistic regression analysis. Two models were based on personal characteristics of DEP members, including age, educational status at DEP entry, mental category and race. A third model looked at the personal characteristics and the amount of time spent in DEP. The fourth model was based on the size of the Navy's DEP pool, time in DEP and recruiting area. The fifth model looked at all the above variables. All the variables mentioned, with the exception of race, were found to be highly significant in predicting DEP attrition. This information should aid Navy managers in predicting and reducing DEP attrition.

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Navy Delayed Entry Program Attrition Analysis

by

Margaret Mary Murray
Lieutenant, United States Navy
B.A., University of California, Los Angeles, 1977

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June 1985

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This study was conducted to identify various personal and organizational predictors of Navy enlisted personnel Delayed Entry Program (DEP) attrition. Every non-prior service male recruit who entered DEP in Fiscal Years 1980 through 1983 was tracked for 12 months from initial enlistment, to determine if he accessed or attrited from the Delayed Entry Program. Five models predicting attrition were developed, using logistic regression analysis. Two models were based on personal characteristics of DEP members, including age, educational status at DEP entry, mental category and race. A third model looked at the personal characteristics and the amount of time spent in DEP. The fourth model was based on the size of the Navy's DEP pool, time in DEP and recruiting area. The fifth model looked at all the above variables. All the variables mentioned, with the exception of race, were found to be highly significant in predicting DEP attrition. This information should aid Navy managers in predicting and reducing DEP attrition.

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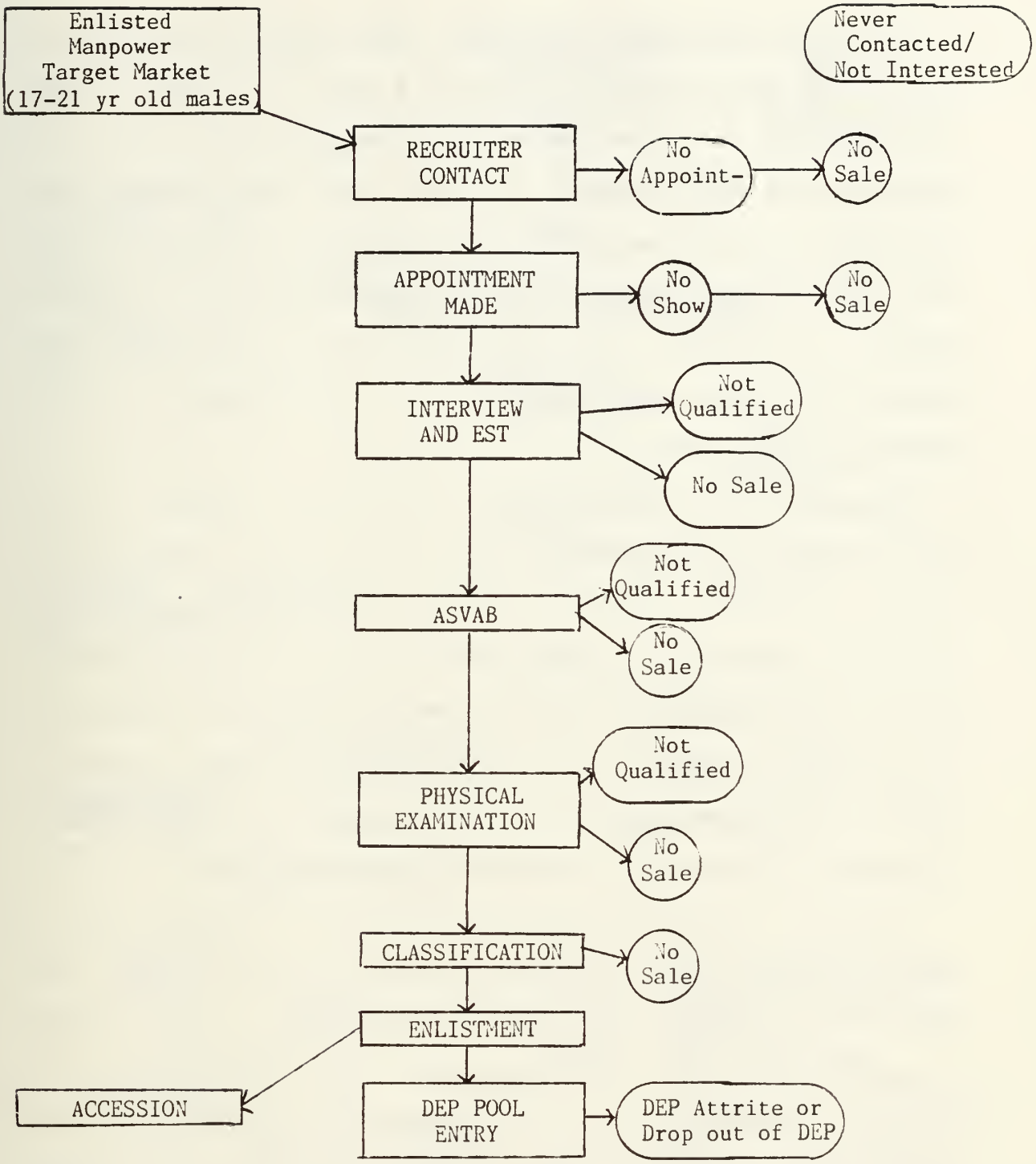
I. INTRODUCTION

A. BACKGROUND

Obtaining the needed quantity and quality of enlisted manpower is a critical task in maintaining an effective Naval Force. This task is initiated by the Navy's strategic manpower planners, who establish monthly accession goals, taking into consideration the recruiting environment and the Navy's manpower replacement and expansion needs. The Navy Recruiting Command (NAVCRUICOM) is responsible for meeting monthly quantity and quality enlisted accession goals. To attain these goals NAVCRUICOM has many resources, incentive plans and a structured recruiting process. The recruiting process, depicted in Figure 1, begins with recruiters contacting individuals in the enlisted manpower market. After initial contact, the prospective recruit is taken through a sequence of events or stages as shown in Figure 1. The ultimate outcome of the recruiting process for each individual is accession to active duty or attrition at some stage of the process.

As an individual goes from one stage to another, more recruiter time and recruiting resources are expended. Attrition at each stage of the process prior to initial enlistment is monitored and controlled by the Tracking and Analysis System, which is outlined in detail in the Recruiter Training and Operating Procedures Standards Manual (RETOPS).



LEGEND:

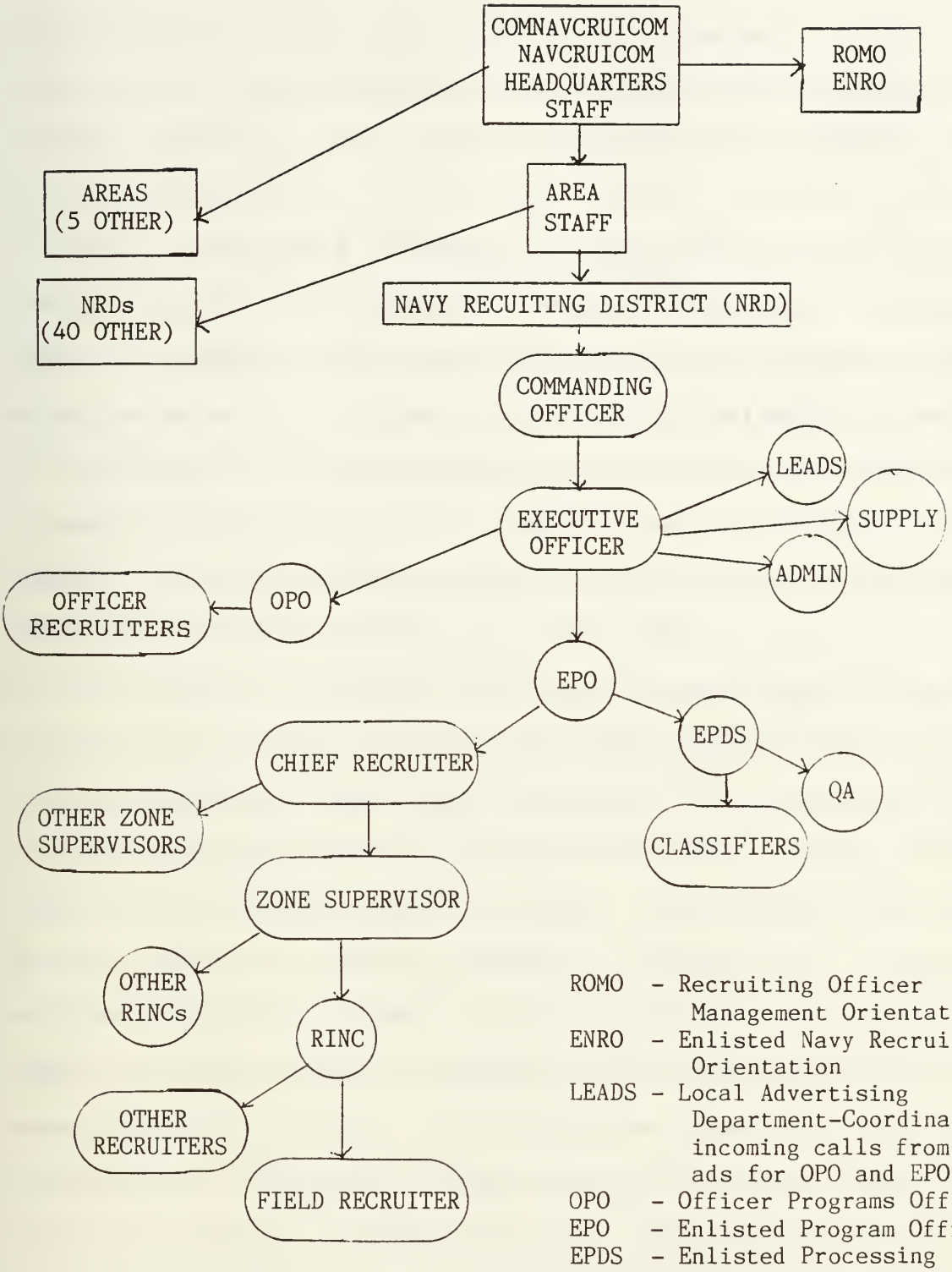
DEP - Delayed Entry Program
ASVAB - Armed Services Vocational Aptitude Test
EST - Early Screening Test

Figure 1. The Recruiting Process

The most expensive attrition occurring before accession is attrition out of the Delayed Entry Program (DEP). Approximately sixty percent of the accession goal each month comes out of the DEP pool. The DEP pool consists of those enlistees who have been assigned a program or job in the Navy but their active duty date is scheduled from one to twelve months in advance. The objective of this thesis is to analyze attrition from the DEP pool by developing predictive models of DEP attrition.

In order to appreciate the issues related to DEP attrition, it is necessary, first of all, to consider the context in which the Delayed Entry Program operates. The following discussion of goal setting, the recruiting environment and process, and incentive plans will lay the foundation for further discussion of DEP attrition. Also, Figure 2, which contains the organizational structure of NAVCRUICOM, is presented to aid in the discussion of these topics.

There are basically three dimensions to the accession goals assigned to NAVCRUICOM; quality, quantity and time. The quality standards for each rating (quality being defined in terms of mental category and education level) are partially determined by percentage of incumbents in the rating at each mental group level who are successful. Projected needs in each rating are then used to predict future mental group percentages needed. Quality requirements are further modified to decrease the likelihood of first-term



ROMO - Recruiting Officer Management Orientation
ENRO - Enlisted Navy Recruiter Orientation
LEADS - Local Advertising Department-Coordinate incoming calls from local ads for OPO and EPO
OPO - Officer Programs Officer
EPO - Enlisted Program Officer
EPDS - Enlisted Processing Supervisor
RINC - Recruiter in Charge of a Station
QA- Quality Assurance

Figure 2. NAVCRUICOM Organization Structure

attrition. A study by the Center for Naval Analysis found that High School Diploma Graduates (HSDG), as a group, had lower first-term attrition rates. This greatly reduces overall training costs. This fact is one of the driving forces behind the percent quotas of High School Diploma Graduates placed by Congress on the Services. Quantity goals are determined from present and future force structure needs. Once the money is approved by Congress to fund a certain end-strength, then recruiting accession goals are figured. The beginning strength of the force minus losses due to attrition, end of obligated service, promotions, retirements, etc., yields the number of new recruits needed to meet end-strength requirements. The number needed to be gained by the Navy in entry level positions becomes the enlisted quantity accession goal. If the quantity and quality accession goals are met, there will be enough of the right kind of people to meet the program goals (goals for each general or specific rating). Attainment of program goals is controlled by NAVCRUICOM Headquarters through the use of CLASP (Classification and Assignment within PRIDE), a computerized assignment system. The number of recruits entering active duty each month must coincide with the capacity and output requirements of the various training schools. CLASP is designed, in part, to control the flow of recruits into active duty. In addition, the Delayed Entry Program (DEP) greatly facilitates this controlled flow. DEP allows an applicant to enlist in

the Navy for a particular job opening or program, reserved for him from one to twelve months in the future, and remain in civilian life in a reserve status while awaiting his active duty date.

Once recruiting accession goals for the fiscal year have been received by NAVCRUICOM, market potential and other factors determine how these goals are distributed to the areas and then to Navy Recruiting Districts (NRDs). Monthly net new contracts and accession goals are assigned at the area and NRD levels. A NRD's monthly accession goal is the number of recruits who must go to the Recruit Training Command (RTC) each month. The monthly net new contract goal is the number of contracts (enlistments) written during any given month, who either go into the Delayed Entry Program or directly on active duty. Sometimes the district manager will not know that an individual has dropped out of DEP until he doesn't show up to be sent to RTC. In this case, the DEP attrite will have to be replaced with an enlistee who can be sent in that month, in order to meet the accession goal. If the potential attrite's active duty date is not shifted for some reason, this loss will be deducted from the district's new contract count for that month. Since the NRDs are assigned goals for net new contracts, a certain percentage of monthly DEP attrition must be assumed. Yearly DEP attrition varies from about 4.58 percent to 18.06 percent across districts, depending on the environment (see Appendix A,

Table A-1). Monthly DEP attrition within each district varies greatly also. These projected monthly DEP losses are added onto each month's new contract goal before it is further distributed among the zones, Recruiters in Charge (RINCs) at Navy Recruiting Stations (NRSs), and individual recruiters. In a typical month about sixty percent of the new contracts go into the Delayed Entry Program while the rest go directly into active duty. Also, about sixty percent of accession goal each month is made up of enlistees in DEP who are due to access that month, the remainder of accession goal is made up of new contracts who go directly on active duty.

B. THE RECRUITING ENVIRONMENT

Recruiting a volunteer force is greatly affected by the size of the qualified youth population, economic fluctuations, current national attitude toward military service, current pay and bonuses offered by the military and changing manpower demands and recruiting resources. The environment in which recruiting occurs affects not only the enlistment process but also the DEP attrition rate. The environmental factors important to the recruiting community are as follows:

1. Job availability and current starting wages for young people.
2. Attitudes of young people toward military service.
3. The size of the target, quality market,including the minority markets in the area.
4. Changes in quantity and quality goals.

5. Changes in recruiting resources.

6. Military compensation packages and bonuses.

7. Density or sparseness of a NRD's or NRS target market.

8. Weather or time of the year.

Some of these factors warrant further comment. First of all, job availability and current starting wages are primarily a function of overall economic conditions in the United States. However, this will vary to some extent across geographic regions. Regarding the third factor, the target market is currently shrinking and will continue to shrink in the near future. This will undoubtedly have a severe impact on recruiting efforts in the future. Finally, the recruiting resources, referred to in factor 5, include the number of recruiters and the size of the advertising and recruiting budgets.

Each recruiting level of NAVCRUICOM (see Figure 2) needs to be aware of how environmental factors affect the recruiter's mission in order to plan strategy to neutralize or work around its effect. The ever-changing environment usually demands a flexible response from recruiters on a daily basis.

C. RECRUITING RESOURCES

NAVCRUICOM's main resources are its highly trained recruiting personnel and staff, and its operating and advertising budget. The field recruiters, who come from many different ratings, are provided with extensive sales

training. This training familiarizes them with recruiting rules and regulations and provides other orientation training to prepare them for recruiting duty. The number of recruiters and the recruiting budget levels for a given fiscal year are usually determined two or more years in advance. Difficulty in predicting future recruiting environments and needs causes the current recruiting environment to be used to determine future recruiting budgets and recruiter allocations. The current environment also partially influences the future of military compensation and bonuses. When such projections are inaccurate, recruiting resources will either be inadequate for meeting recruiting goals or there will be a surplus. When the economy is growing fast, people tend to leave the service at a higher rate, which increases accession goals. On the other hand, when the economy is slow, retention is usually high and therefore accession goals are lowered. When resources are good and the economy slows down, there is an increase in new contracts written while accession goals go down. This is one of the possible explanations for the increase in the size of the DEP which occurred in Fiscal Years 1982-83 (see Appendix A, Table A-2).

D. RECRUITING INCENTIVE PLANS

Incentive plans and rewards are needed in order to recruit the needed quality and quantity of youths and to

maintain morale among recruiters. In recruiting, the three major reward systems are the Gold Wreath Award, the Freeman Plan and a national competition system. The Freeman Plan and the national competition system include incentives to keep DEP attrition down. The Gold Wreath Award is actually a series of awards. Each one is earned by individual recruiters or recruiting managers by attaining established criteria for excellence in recruiting. The Freeman Plan, developed by Admiral Freeman, is an outstanding incentive plan that encourages recruiters to seek out and recruit the quality individuals most needed by the Navy. The reward system of the Freeman Plan is based on differing amounts of points given to recruiters for new contacts. The points gained are based on the recruits' educational status and mental group. HSDGs and upper mental groups are worth more points than non-HSDGs and lower mental groups. For instance, a HSDG, mental category 1 recruit is worth 116 points. An average of 525 points per month is needed to be eligible for the award of advancement to a higher pay grade. Points are subtracted from the recruiter's total for recruits who drop out while they are in the Delayed Entry Program, or during their first ten days at Recruit Training. The rewards offered by the Freeman Plan are very substantial. They are, in ascending order, a Certificate of Commendation, the Navy Achievement Medal, an extension on recruiting (optional), and advancement to the next higher pay grade. Each recruiter receives a computer printout each month, called the "1000

Report," which shows his cumulative Freeman points and which award he is close to or has earned. This report also gives the number of enlistments he achieved each month, his weeks excused, his DEP attrites and his production per recruiter (PPR). His PPR is his average number of recruits per month after week excused and DEP attrition are figured in. A new recruiter is subject to removal from recruiting duty if his PPR is below 2.0 in his fifth and sixth months on production.

The national competition system is an incentive for Navy Recruiting Districts to compete with each other for high standing in a ranking of districts based on points earned. The different points that can be earned are established in the rules of the competition system before each fiscal year begins. The point values are based on achievement of quantity, quality, some general programs, minority and other goals established by NAVCRUICOM Headquarters and assigned to each district. Since net new contracts are the major criterion, each DEP attrite must be replaced, usually with a recruit of equal or similar class of program and quality. The incentive for a district to rank high in the system is strong, as this standing is often reflected in key managers' fitness reports or evaluations.

E. THE RECRUITING PROCESS

The current formal recruiting process followed by field recruiters is standardized and described in detail in a recruiting manual called RETOPS. The recruiting process has

built-in flexibility to respond to changes in the environment and quantity and quality goals. The following is a brief, simplified description of the recruiting process. (Refer to Figure 1 for clarification.) A typical recruiter who has been on production about six months may be given a goal of three or four new contracts for the month. A new contract is an enlistee who either enters active duty during the month enlisted, or goes into the Delayed Entry Program pool. Each recruiter is then assigned a target number of attempts, contacts, appointments, interviews, testers and physicals needed to attain his new contract goal according to present quality standards. His attempts and contact goals are further divided into certain target number of phone contacts, referrals, personally developed contracts, advertising call-ins and walk-ins, based on the market for which he is working, and on his preferences and talents. A sufficient number of quality contacts are provided by the RINC or he is aided in locating them if he has trouble. Contacts may come through high school ASVAB lists, call-ins from advertising, referrals from members of the recruiter's DEP pool, or visits to local high schools. Much of the guidance on where to find the quality market comes from the RINCs, zone supervisors and Chief Recruiter. The recruiter then schedules the time and the place to make these contacts early in the month. His training has equipped him with the sales techniques needed to move a qualified, interested applicant through the sales

process to closing the sale. After contacting and screening prospective applicants, an appointment to interview is scheduled if the individual is interested in the military service. At the time of the interview, after the recruiter's sales pitch, prospective applicants take the Enlisted Screening Test (EST). If they qualify, they may agree to prepare an enlistment package and schedule to take the ASVAB and physical examination if they have not already done so.

After an applicant passes the ASVAB and physical exam, he is then sent to or scheduled to see a Navy Classifier, who will ultimately reserve a specific billet for him in the Navy. The classifier uses a sophisticated, computerized assignment system called Classification and Assignment within PRIDE (Personalized Recruitment for Immediate and Delayed Enlistment) (CLASP) to attain the best match between the individual's desires and aptitude and the Navy's needs. CLASP takes into consideration each applicant's ASVAB score, job preferences, minority group membership, physical qualifications, citizenship and educational status. CLASP has built into its assignment model the Navy's needs in terms of quantity and quality for each rating and other positions. CLASP is then used to assign the applicant to a rating or general billet for which he is best suited. CLASP also assigns a date for entry into the service when the billet has an opening. At this point, the applicant is either placed in the Navy's Delayed Entry Program or sent to active duty within the month. Again, individuals may be placed in DEP

from one month to twelve months depending on the active duty enlistment date. High school seniors are often placed in DEP, not only awaiting their assigned position, but also graduation from high school. As a result of CLASP and the Delayed Entry Program, enlistees filling specific billets enter the Navy in a controlled flow. This controlled flow of manpower into the Navy meets not only the manpower quantity and quality goals, but the timing and program goals as well.

At each level of the recruiting process, from contact to accession, prospective applicants fall out or are weeded out due to their own volition (no sale) or due to noncompliance with the Navy's mental, physical or moral standards which are spelled out in detail in the Navy Recruiting Manual (see Figure 1). The recruiter is still responsible for his applicants after they have enlisted in the Delayed Entry Program. There are rules and regulations governing the recruiter's role in motivating and keeping track of DEP members. The recruiting process does not end until sometime after the enlistee enters the Recruit Training Center. After a while on production, recruiters develop their own recruiting styles while still complying with the required standard recruiting procedures, and they are still very effective and make or exceed their goals. If they experience trouble, they revert back to a more formal and structured recruiting method.

Each month, a certain amount of unexpected DEP attrition may occur. These individuals are then immediately replaced

in order to meet accession goals. If expected DEP attrition in succeeding months could be predicted, an accurate number and needed quality of replacements could be lined up in advance. As further background for understanding of a DEP attrition prediction model, the following chapter is a discussion of the Delayed Entry Program.

II. THE DELAYED ENTRY PROGRAM

The Delayed Entry Program is a complex system that is mainly managed by the Enlisted Program Officer (EPO) (see Figure 2) at each Navy Recruiting District. The EPO controls the number of enlistees placed in the DEP during each month of the coming year, in order to meet his accession goals each month. The DEP pool consists of everyone who is in DEP at a given point in time. When the DEP pool is relatively small, in a given month, new enlistees are placed in DEP for a shorter period of time than when the pool is relatively large. This is because, in the succeeding month, sixty percent of the EPO's accession goal will be taken from the DEP pool. Thus, the EPO may not be able to meet the accession goal for the succeeding month if too many people are placed in DEP for longer periods of time. On the other hand, when the pool is large, in a given month, then a certain ideal percentage level of DEP members are scheduled for active duty in each of the following months.

CLASP's scheduling of an enlistee to active duty in a particular month can be controlled, to a degree, by having the classifier only look for openings in certain months. The smaller the DEP pool, the fewer future months the EPO will allow the classifiers to search in CLASP. As a result, more limited assignments are open to enlistees. This could result

in a less than optimal match between applicant and billet. The Navy utilizes the Production Upgrade Management Program (PUMP) to increase the size of the DEP pool in all districts that have small pools. This not only increases assigning options in CLASP, but also gives recruiters more opportunity to obtain referrals from DEP members.

The DEP pool can be compared to a bank account. If there are more deposits (new contracts) made than withdrawals (accessions), then the account (DEP pool) will grow. During favorable recruiting times, as in 1982 and 1983, large numbers of new contracts were written that exceeded the accession goal, thereby causing the DEP pool to grow. As the DEP pool grows, more contracts are placed in DEP for longer periods of time. Although this has some advantages, as stated above, the disadvantage is that attrition rates increase as time in DEP increases (see Table 12). This could be one of the reasons for the doubling of average DEP attrition rate from 6.68 percent in 1980 and 1981, to 10.54 percent in 1982 and 1983. DEP size grew from 82,010 to 113,275 during those two periods (see Appendix A, Table 2-A). By no means is this suggesting a large DEP pool is undesirable. The large DEP pool is an asset in that members of the pool generate referrals to recruiters. A large pool also allows the classifiers to place individuals further out in time, giving them a larger choice of school seats. This may result in a better match between individuals and jobs,

and may even result in lower active duty attrition by increasing satisfaction with the assignment process.

Attrition from the Delayed Entry Program may occur at any point between initial enlistment and the active duty date. Annual attrition rates tend to vary over time and across districts. In recent years, it has varied from 4.58 percent to 18.06 percent per year (see Appendix A, Table A-1). Accurate prediction of DEP attrition would be especially helpful at the District level. The expected DEP attrition for each month must be estimated by the EPO in order to adjust future monthly new contract goals so that replacements can be lined up. Thus, a certain number of contracts are added, usually by the EPO, to the district's new contract goals to make up for DEP attrition. If this is done accurately, then the new contract goal for the month will be met without any last minute surprises. Also, high-attrition-risk individuals can be monitored more closely or placed in DEP for shorter time intervals.

When a DEP attrite is recognized or registered in the computer, the lost contract is subtracted from the district's new contracts for that month. A DEP member's date for active duty may be postponed to a maximum of twelve months after the DEP entry date, but there should be a good reason for such postponements. Although it is not authorized, a DEP member's active duty date may be postponed even if it is known that the DEP member has already been lost, since the

EPO does not want this contract to be subtracted from the number of new contracts for the month. If a DEP member's loss is not known or recognized until he is due to access, this lost accession must be replaced immediately in order to fulfill the accession goal. This means that additional individuals must be recruited who will go on active duty in the same month they enlist. These recruits are often referred to as "Hot Shippers." A certain number of openings for Hot Shippers are necessary because some HSDGs and most non-HSDGs in the work force often want to go to work as soon as possible. Aside from such individuals, it is difficult to recruit someone into an available billet and send him on active duty in the same month.

Replacement contracts for DEP losses cost at least as much to recruit as new contracts. If high quality contracts are lost, they must be replaced with high quality contracts, and they are the mostly costly to recruit. It is especially difficult to find high quality replacement contracts who will enter active duty almost immediately, because good school seats are limited when the classifier can only look at the current month's openings in CLASP. This could result in a less-than-optimal match, which would cause a higher chance of attrition later. In 1980 and 1981 average DEP attrition was 6.68 percent nation- wide and 67.56 percent of these attrites were high quality individuals. High quality is defined as those DEP members who are seniors in high school

or have an education level of HSDG or above and who are in mental groups I, II, or IIIA. In 1982 and 1983 average DEP attrition was 10.54 percent nation-wide and 84.32 percent of these attrites were high quality individuals (See Appendix A, Table A-3.) During 1980 and 1981, 79.98 percent of the DEP pool was high quality. During 1982 and 1983, 87.25 percent of the DEP pool was high quality (see Appendix A, Table A-3).

A certain level of DEP attrites should be expected and even considered healthy, as these enlistees might have dropped out of recruit training anyway. RTC attrition is more costly than DEP attrition because beyond recruiting costs, full pay and training costs have begun at RTC. On the other hand, it is to the best interest of each Navy Recruiting District and NAVCRUICOM to monitor, control and reduce DEP attrition as much as possible, especially attrition of high quality individuals.

Although the EPO mananges the DEP pool, it is the production recruiters and their RINCs who are responsible for the individuals in the DEP. Although attrition from DEP may occur for reasons beyond the control of the recruiter, he does everything in his power to maintain motivation in his DEP members and prepare them for active duty. Managing DEP members and using them as a source of referrals requires special leadership skills and a well-thought-out plan of action. Most Navy Recruiting Stations prepare their own plans for handling DEP members. There are small token

rewards, such as ball caps and belt buckles, for DEP members who refer someone who subsequently qualifies and enlists. Most recruiters have get-togethers for their DEP members and their friends; they might go on an outing to a Naval Base, watch Navy films or learn Navy jargon and how to tie knots.

There are many factors that can be considered when predicting DEP attrition. One is the amount of time an individual spends in the DEP pool awaiting his active duty date. DEP attrition rates increase as a function of time in DEP (See Table 12). A second is the total annual size of the Navy's DEP pool. The size of the DEP pool is reflective of the economy and job availability as explained earlier. As a result, the size of the DEP pool may indicate good or bad recruiting times. The area in which a recruit is enlisted into the Navy may also be important in predicting DEP attrition. Besides DEP management differing across areas, other things, such as regional unemployment levels, are likely to affect DEP attrition differently by region. Finally, personal characteristics such as age, race, mental category and education-level may be predictive of DEP attrition, since a number of studies have found these variables to be significant in predicting first-term attrition. (Lockman and Lurie, 1980; A. W. Lau, Mar 1979).

The following chapters describe a set of statistical models for predicting DEP attrition. These models were derived from DMDC files from fiscal years 1980 through 1983.

These types of models and analyses can be used by policy makers at NAVCRUICOM and by DEP managers at the NRD level who shoulder the responsibility for DEP attrition.

III. METHODOLOGY

A. DATA BASE

The longitudinal data base used in this study was derived from a sample from the Military Enlisted Processing Command (MEPCOM) file maintained by the Defense Manpower Data Center (DMDC). The MEPCOM file is basically a transaction file. That is, it provides a report at the end of each month of everything that happened to enlistees at each Military Enlisted Processing Station (MEPS) during the month. Events include updating the status of old files and creation of new files.

The sample records requested from this MEPCOM file were Navy non-prior service males, who signed an initial enlistment contract between October 1979 and September 1983 (Fiscal Years 1980 through 1983). Generally MEPCOM does not record a change in status that occurs when a DEP member drops out of DEP or does not show up on his active duty date. However, the Navy's records for DEP members are usually updated with DEP attrition information at least by the end of the individual's twelfth month in DEP. Therefore, to establish, from the MEPCOM file, whether a recruit became an accession or a DEP loss, his monthly records had to be tracked for one year. If there was no indication that he had accessed within one year after the DEP entry date, he was considered to be a DEP attrite. The individual's final

amount of time he was in the system as a DEP member was the amount of time he was considered to be in DEP before official attrition or accession. In some cases, the MEPCOM file did show that the individual had dropped out of DEP; these cases were identified as DEP attrites also.

The MEPCOM file contains a large amount of information. The information used in the analyses included:

1. Fiscal year
2. Attrition status
3. Race (black and white only)
4. Month and year entered DEP
5. Month and year entered active duty (projected or actual)
6. Mental category
7. Education status at the time entered DEP
8. Area in which enlisted
9. NRD in which enlisted
10. Age at time of initial enlistment.

Items 4 and 5 above were used to figure the months in DEP (MODEP) and time in DEP (quarterly) (TDEP) variable in the statistical modes.

B. VARIABLES

The variables used in this thesis are contained in Table I. Many other variables were available in the DMDC file but not utilized; for instance, ethnic group, program assigned, waiver status, marital and dependency status.

TABLE 1

VARIABLES USED IN MODELS OF
DELAYED ENTRY PROGRAM ATTRITION

Variable	Variable Abbreviation	Variable Description	Variable Categories	Category Abbreviations
Attrition Status	ATST	Accession to active duty or attrition from DEP.	Accession Attrition	ACCS DATT
Size of DEP	DEPSIZE	Categorical variable for the number in DEP during a given fiscal year.	33,001-40,000 40,001-47,000 47,001-54,000 54,001-61,000	Same
Months in DEP	MODEP	Number of months that the individual spent in DEP or in DEP status prior to accession or recognized attrition. (DEP Status refers to being in DEP pool on official records.)	1 through 12	Same
Quarters in DEP	TDEP	Number of three-month time periods spent in DEP prior to accession or attrition.	1-3 months 4-6 months 7-9 months 10-12 months	1QT 2QT 3QT 4QT
Recruiting Area	AREA	Area in which the Navy Recruiting District is located where the DEP member enlisted.	1, 3, 4, 5, 7 and 8	Same
Age	AGE	Age of the DEP member at the time of DEP entry.	17 18 19 20 21 or older	17 18 19 20 21

TABLE 1 (continued)

Variable	Variable Abbreviation	Variable Description	Variable Categories	Category Abbreviations
Mental Group	MEN	Individual's mental aptitude category based on Armed Services Vocational Aptitude Battery Score.	1 2 3A 3B 4	Same
Consolidated Mental Group	GRPMEN	Individual mental aptitudes based on his ASVAB score grouped in two categories.	Mental Groups 1 and 2 Mental Groups 3A, 3B and 4	UPRMEN LOWMEN
Racial Group	MIN	Self report of race.	Black White	Same
Level of Education	GRDSTA	Level of education at time of DEP entry.	Completion or partial completion of a post-secondary educational program	COLLEGE
			High School diploma	HSDG
			Senior in High School	SENIOR
			No High School diploma	NONGRD

The ethnic group code was missing on most records in the sample so this code could not be used to identify hispanic as a group for attrition analysis. The program codes contained in the records did not match the program codes and descriptions outlined in the NAVCRUICOM manual. Therefore, program groups such as seaman, airman, fireman school guarantee and nuclear power program could not be isolated and analyzed.

C. STATISTICAL PROCESS

The FUNCAT procedure of the Statistical Analysis System (SAS) was used to perform the logistic regression analyses. The FUNCAT procedure ignores an individual's record if there is a missing value indicator for any variable in the model. Therefore, the number of observations varies across models. Maximum likelihood estimation was used to compute regression coefficients for five different models. The dependent variable chosen for all models was DEP attrition status, while the independent variables varied across the models. Table 2 outlines the variables used for each of the models.

TABLE 2

DEPENDENT AND INDEPENDENT VARIABLES FOR EACH MODEL

Model Name	Dependent Variable	Independent Variables			
MOD1	ATST	MIN	MEN	AGE	GDSTA
MOD2	ATST	MEN	AGE	GRDSTA	
MOD3	ATST	MEN	AGE	GRDSTA	TDEP
MOD4	ATST	DEPSIZE	AREA	MODEP	
MOD5	ATST	DEPSIZE	AREA	TDEP	GRPMEN
		AGE	GRDSTA		

IV. RESULTS

Results for Model I, which is based on the personal characteristics, are shown in Tables 3 and 4. The minority group variable (MIN) failed to show a significant relationship to DEP attrition at the .05 level, as shown by the chi-square value for MIN in Table 3. The chi-square values for the remaining variables were all highly significant, ($p < .0001$). The likelihood ratio chi-square statistic divided by its degree of freedom yielded an F value for lack of fit of 2.88.[1] The coefficient of determination between actual and predicted attrition (R^2) for this Model I was .16. Figure 3 presents a frequency bar chart of the residuals for this model. The frequency counts are based on the number of cells in each interval, rather than the number of observations.

In Model II, the minority group variable was dropped, since it failed to make a significant contribution to Model I. Results for Model II are shown in Tables 5 and 6. In this model all the variables show a significant relationship to DEP attrition at the .05 level. The F value for lack of fit for Model II was 2.63. The R^2 for this model was .06.

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[1]The expected value of this statistic is 1.0 if a model fits the data perfectly.

TABLE 3

CHI-SQUARE TESTS FOR MAIN EFFECTS
PERSONAL CHARACTERISTICS MODEL INCLUDING MIN

MODEL I

Source	df	Chi-square	p
AGE	4	303.10	.0001
GRDSTA	3	533.25	.0001
MIN	1	3.77	.0521
MEN	4	110.78	.0001
Likelihood ratio	173	498.23	.0001

Number of observations = 187,689

Number of cells = 185

Average number of observations per cell = 1,222

TABLE 4

REGRESSION EQUATION FOR THE
PERSONAL CHARACTERISTICS MODEL INCLUDING MIN

Model I

Effect	Parameter	Parameter Estimate[2]	Chi-square	p
Intercept		2.43	17,336.30	.0001
AGE	17	0.17	80.57	.0001
	18	0.12	62.51	.0001
	19	0.41	5.85	.0156
	20	- 0.05	4.33	.0373
	21+	- 0.65		
GRDSTA	COL	0.09	4.29	.0383
	HSDG	0.25	196.52	.0001
	NONGRD	- 0.04	3.42	.0643
	SENIOR	- 0.30		
MIN	WHITE	0.24	3.77	.0521
MEN	1	- .21	79.38	.0001
	2	- 0.21	1.46	.2274
	3A	0.11	42.17	.0001
	3B	0.05	11.38	.0007
	4	0.26		

[2]Maximum likelihood procedure is used to estimate the regression coefficient of the logit model. (Grizzle et al, 1969)

Figure 3
Frequency Bar Chart of Residuals for Model I

TABLE 5

CHI-SQUARE TEST FOR MAIN EFFECTS FOR THE PERSONAL CHARACTERISTICS MODEL EXCLUDING MIN

MODEL II

Source	df	Chi-square	p
AGE	4	394.96	.0001
GRDSTA	3	362.79	.0001
MEN	4	87.98	.0001
Likelihood ratio	86	226.05	.0001

Number of observations	=	194,760
Number of cells	=	98
Average number of observations per cell	=	1987

TABLE 6

REGRESSION EQUATION FOR THE
PERSONAL CHARACTERISTICS MODEL EXCLUDING MIN

MODEL II

Effect	Parameter	Parameter Estimate	Chi-square	p
Intercept		2.27	18267.5	.0001
AGE	17	0.20	117.49	.0001
	18	0.14	79.12	.0001
	19	0.04	4.59	.0322
	20	- 0.05	4.51	.0337
	21+	- 0.32		
GRDSTA	COL	0.17	15.63	.0001
	HSDG	0.20	126.12	.0001
	NONGRD	- 0.22	107.01	.0001
	SENIOR	- 0.15		
MEN	1	- 0.17	55.75	.0001
	2	- 0.05	8.62	.0033
	3A	0.06	14.72	.0001
	3B	0.05	13.85	.0002
	4	0.11		

Appendix B contains the actual and predicted DEP attrition and the residuals for each cell. The frequency bar chart of the residuals for model II is displayed in Figure 4.

Model III uses the same personal characteristics as Model II except that time in DEP (quarterly) is added for practical use by DEP managers. The results of Model III are shown in Tables 7 and 8. All the variables are still highly significant. The F value for lack of fit for Model III was 1.84. The R^2 for this model was .51. Appendix C contains the actual and predicted DEP attrition and the residual for each cell. Figure 5 contains the frequency bar chart of the residuals for Model III. The negative parameter estimates in this model (see Table 8) identify those parameters that have higher attrition rates. Model III indicates that ages 19, 20 and 21 plus show increasingly higher attrition rates; nongrads have the highest attrition rate in the GRDSTA variable; mental groups one and two have the highest attrition in the MEN variable; and those over seven months in DEP have increasingly higher attrition rates.

Table 9 contains a crosstab analysis of observed attrition percentages in FY 80-81 and FY 82-83 of all the variable categories in Model III. Table 9 is included to further support the negative parameter estimates findings.

Tables 10 and 11 contain the results for the Recruiting System Model, Model IV. All of the variables showed a significant relationship to DEP attrition at the .05 level.

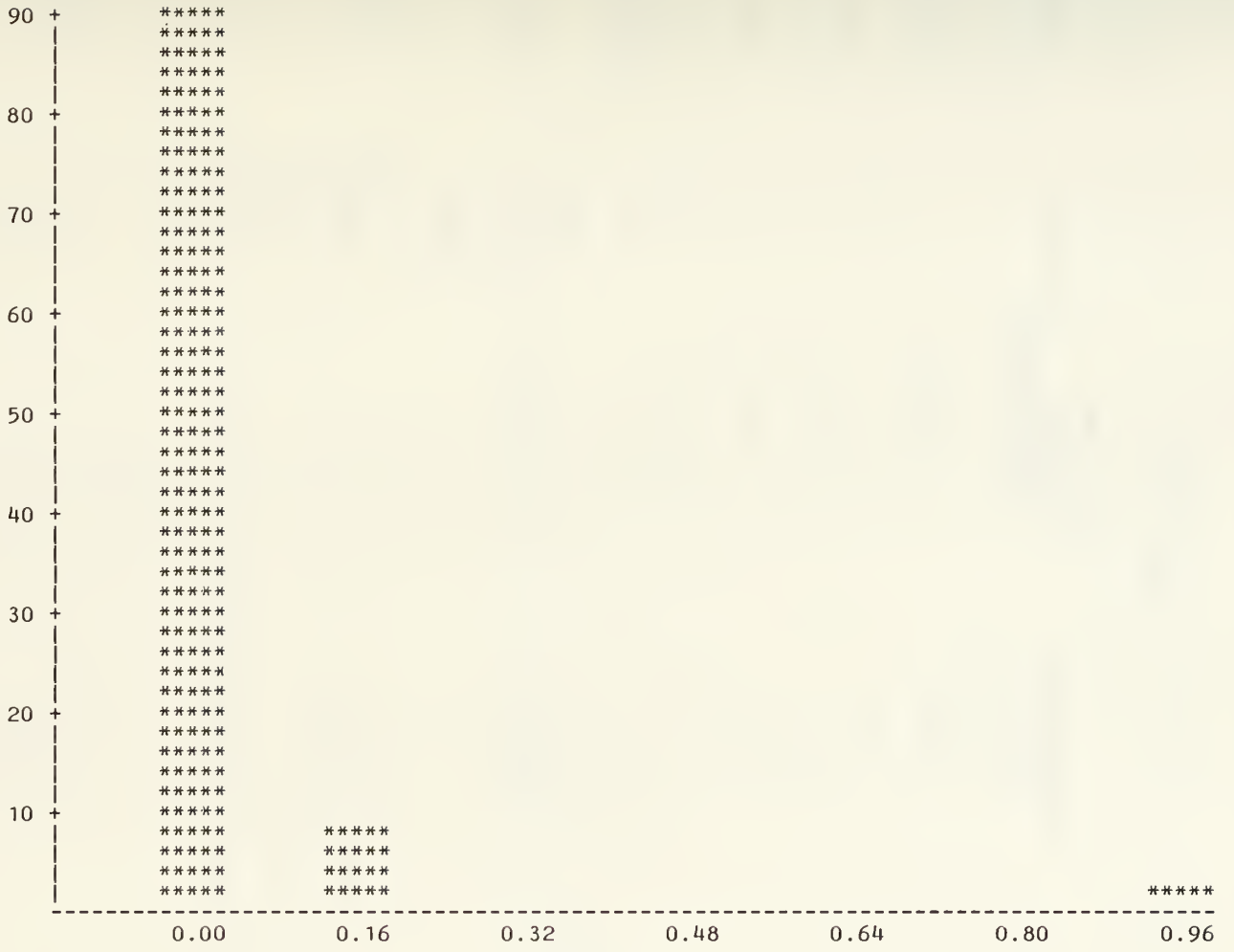

Figure 4

Frequency Bar Chart of Residuals for Model II

TABLE 7

CHI-SQUARE TEST FOR MAIN EFFECTS FOR THE PERSONAL CHARACTERISTICS MODEL INCLUDING TIME IN DEP

MODEL III

Source	df	Chi-square	p
AGE	4	824.87	.0001
GRDSTA	3	647.14	.0001
MEN	4	191.28	.0001
TDEP	3	8021.98	.0001
Likelihood ratio	359	661.74	.0001

Number of observations = 194760

Number of cells = 374

Average number of observations per cell = 521

TABLE 8

REGRESSION EQUATION FOR THE
PERSONAL CHARACTERISTIC MODEL INCLUDING TIME IN DEP

Model III

Effect	Parameter	Parameter Estimate	Chi-square	p
Intercept		2.17	15523.61	.0001
AGE	17	0.47	580.62	.0001
	18	0.12	61.77	.0001
	19	- 0.05	6.92	.0088
	20	- 0.12	27.54	.0001
	21+	- 0.42		
GRDSTA	COL	0.10	5.8	.0160
	HSDG	0.11	33.72	.0001
	NONGRD	- 0.42	381.44	.0001
	SENIOR	0.21		
MEN	1	- 0.22	92.04	.0001
	2	- 0.07	20.28	.0001
	3A	0.05	9.42	.0021
	3B	0.12	73.88	.0001
	4	0.12		
TDEP	1-3	1.0	4077.16	.0001
	4-6	0.27	320.51	.0001
	7-9	- 0.21	209.82	.0001
	10-12	- 1.06		

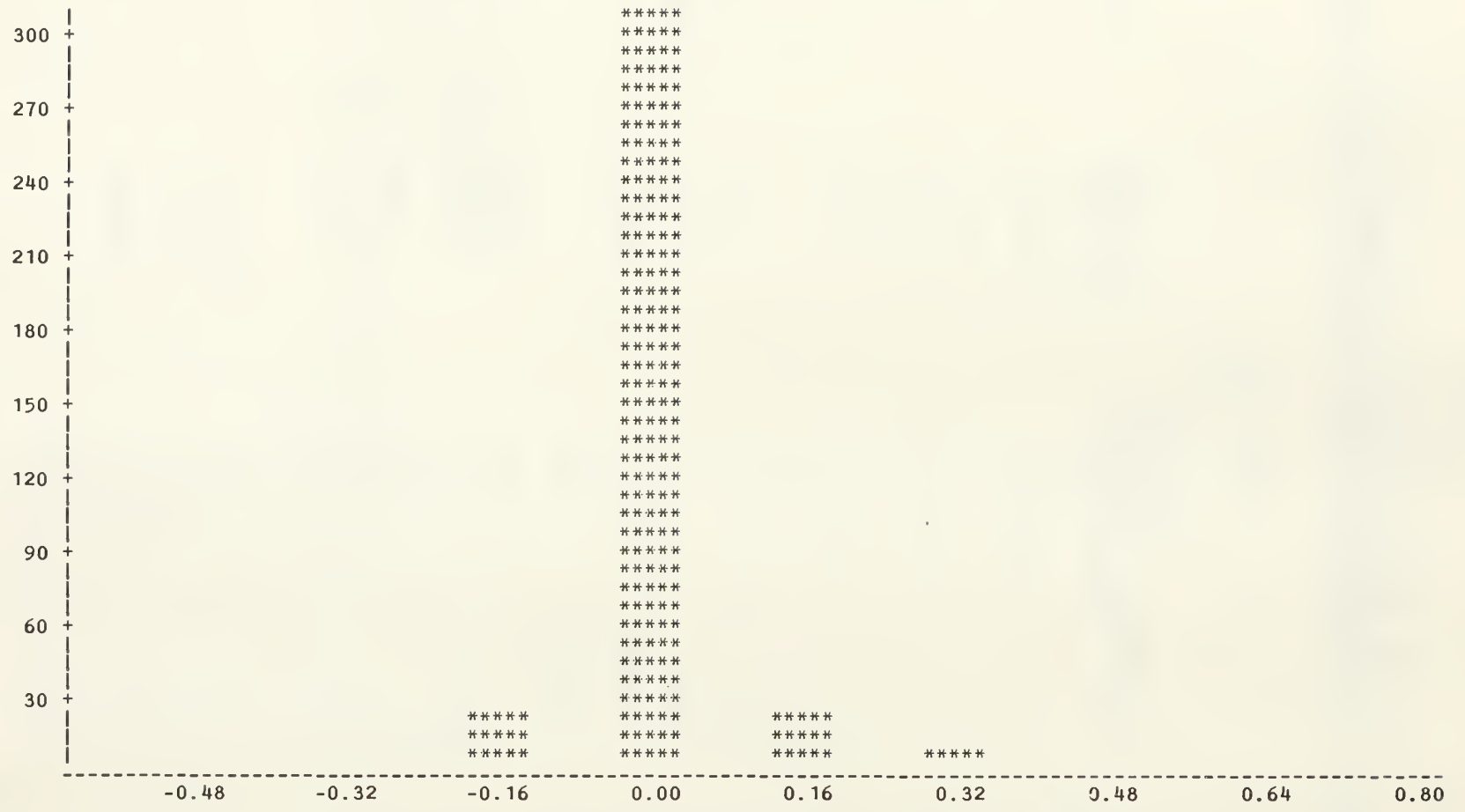

Figure 5
Frequency Bar Chart of Residuals for Model III

TABLE 9

CROSS TABULAR ANALYSIS OF MODEL III VARIABLES

Variable	Variable Category	Observed Attrition Percentages 1980-81	1982-83
AGE	17	6.8	10.35
	18	6.36	10.01
	19	6.61	9.47
	20	6.33	10.03
	21+	7.39	12.50
MEN	1	9.33	11.26
	2	6.63	11.55
	3A	6.13	10.39
	3B	6.30	10.04
	4	6.42	9.85
GRDSTA	COL	8.06	10.73
	HSDG	5.58	9.65
	NONGRD	8.05	13.29
	SENIOR	7.11	10.74
TDEP	1-3	3.75	4.11
	4-6	6.85	7.87
	7-9	8.92	10.59
	10-12	16.21	21.65

TABLE 10

CHI-SQUARE TEST FOR MAIN EFFECTS FOR THE RECRUITING SYSTEM MODEL

MODEL IV

Source	df	Chi-square	p
DEPSIZE	3	391.34	.0001
AREA	5	215.20	.0001
MODEP	11	7797.44	.0001
Likelihood ratio	359	661.74	.0001

Number of observations	=	194,220
Number of cells	=	288
Average number of observations per cell	=	674

TABLE 11

REGRESSION EQUATION FOR THE RECRUITING SYSTEM MODEL I

MODEL IV

Effects	Parameters	Parameter Estimate	Chi-square	p
Intercept		2.34931	64857.74	.0001
DEPSIZE	33,001-40,000	0.24	173.03	.0001
	40,001-47,000	- 0.04	5.15	.0232
	47,001-54,000	0.04	7.56	.0060
	54,001-61,000	- 0.24		
AREA	1	0.07	16.92	.0001
	3	0.09	24.76	.0001
	4	0.10	35.49	.0001
	5	0.08	14.18	.0002
	7	- 0.11	30.43	.0001
	8	- 0.23		
MODEP	1	1.16	1112.5	.0001
	2	0.85	673.4	.0001
	3	0.61	414.73	.0001
	4	0.35	148.17	.0001
	5	0.20	47.5	.0001
	6	0.05	3.06	.0802
	7	- 0.01	.03	.8547
	8	- 0.12	19.34	.0001
	9	- 0.29	119.91	.0001
	10	- 0.46	294.64	.0001
	11	- 0.75	926.95	.0001
	12	- 1.59		

Table 11 indicated that the variable category seven months in DEP, $p < .8547$ showed a possible zero relationship to predicting attrition. However, most of the variable categories were highly significant, $p < .0001$. As with previous models, Model IV seemed to provide a good fit to the data ($F = 1.84$). Model IV has an R^2 of .89. The response functions, actual and predicted DEP attrition and residuals for each cell, are located in Appendix D. The frequency bar chart of the residuals for Model IV is found in Figure 6. In this model the negative parameter estimates indicate that a DEP size 40,001-47,000 and 54,001-61,000 have higher attrition rates. These two DEP sizes refer to fiscal years 1981 and 1982, respectively. The DEP sizes chosen were a range of DEP sizes for each of the fiscal years studied. Other things could be causing the attrition fluctuation besides DEP size. Also, areas 7 and 8 have higher DEP attrition and as seen in Model III, being in DEP longer than six months usually means increasingly higher attrition rates.

Table 12 contains a crosstab analysis of the observed attrition percentages in FY 80-81 and FY 82-83 of all the variable categories in Model IV. Attrition percentages of the variable MODEP do not start to differ greatly until about six months or greater in DEP after this point, then the differences widen. In both sets of years, attrition increases steadily as time in DEP increases and both show almost a doubling in attrition rate between the eleventh and twelfth month in DEP.

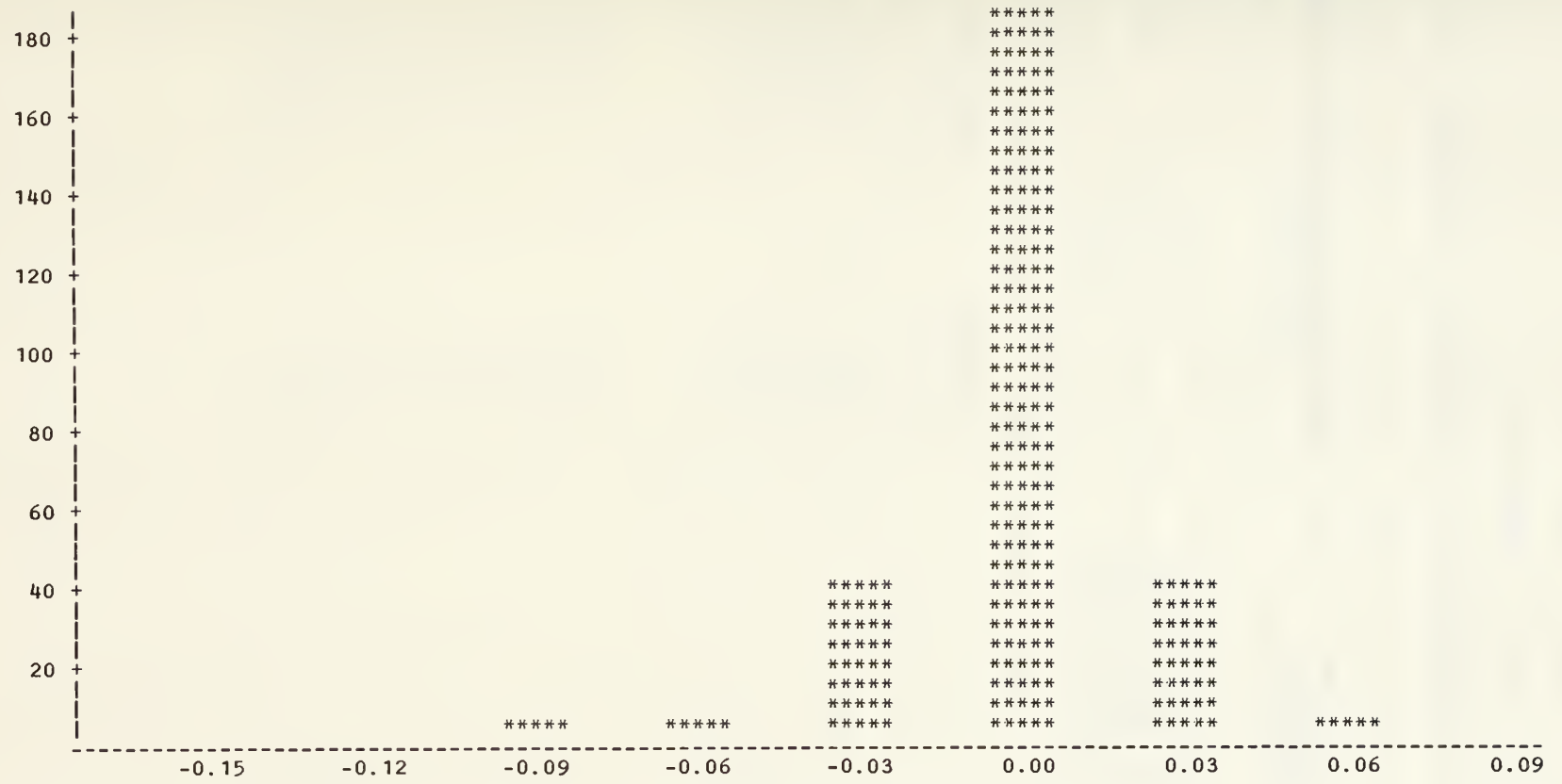

Figure 6
Frequency Bar Chart of Residuals for Model IV

TABLE 12

CROSS TABULAR ANALYSIS OF MODEL IV VARIABLES

Variable	Variable Category	Actual Attrition Percentages 1980-1983	
DEPSIZE	33,001-41,000	6.13	
	40,001-47,000	7.08	
	47,001-54,000	11.00	
	54,001-61,000	10.12	
		1980-81	1982-83
AREA	1	6.27	10.24
	3	5.82	10.43
	4	6.61	9.29
	5	6.62	9.78
	7	7.13	11.14
	8	8.44	13.75
MODEP	1	2.89	2.96
	2	4.07	3.96
	3	5.09	5.08
	4	6.31	6.76
	5	6.89	7.91
	6	7.56	9.05
	7	7.58	9.54
	8	9.07	10.29
	9	10.25	11.93
	10	11.68	13.87
	11	12.91	18.25
	12	24.74	35.08

The results for the full model, Model V, are shown in Tables 13 and 14. As with Models II and III, each of the variables showed a significant relationship to DEP attrition at the .05 level or better. Table 14 indicated that the variable categories, Area 1, whose p value is less than .5012, and Area 5, whose p value is less than .0575, show a possible zero relationship to predicting attrition. Almost all the other variable categories show a significant relationship to DEP attrition. The F value for lack of fit was 1.27, indicating an improvement over previous models. The R^2 for Model V was .30. The variable categories with negative parameter estimates this model are consistent with those in other models. The frequency bar chart for residuals for Model V is found in Figure 7.

TABLE 13

CHI-SQUARE TEST FOR MAIN EFFECTS FOR THE FULL MODEL

MODEL V

Source	df	Chi-square	p
DEPSIZE	3	313.06	.0001
TDEP	3	7224.28	.0001
AREA	5	132.26	.0001
AGE	4	777.75	.0001
GRDSTA	3	574.75	.0001
GRPMEN	1	151.98	.0001
Likelihood ratio	3183	4034.63	.0001

Number of observations	=	193698
Number of cells	=	3103
Average number of observations per cell	=	62

TABLE 14

REGRESSION EQUATION FOR THE FULL MODEL

MODEL V

Effects	Parameter	Parameter Estimate	Chi-square	p
Intercept		2.18	16532.97	.0001
DEPSIZE	33,001-40,000	0.18	89.79	.0001
	40,001-47,000	- 0.07	19.85	.0001
	47,001-54,000	0.10	46.63	.0001
	54,001-61,000	- 0.21		
TDEP	1-3	1.1	3845.75	.0001
	4-6	0.28	345.83	.0001
	7-9	- 0.21	216.22	.0001
	10-12	- 1.17		
AREA	1	0.01	.45	.5012
	3	0.10	34.20	.0001
	4	0.09	29.38	.0001
	5	0.04	3.61	.0575
	7	- 0.08	14.94	.0001
	8	- 0.16		
AGE	17	0.47	558.59	.0001
	18	0.11	54.83	.0001
	19	- 0.06	8.14	.0043
	20	- 0.12	26.19	.0001
	21+	- 0.40		
GRDSTA	COL	0.09	3.85	.0497
	HSGD	0.10	28.07	.0001
	NONGRD	- 0.39	319.30	.0001
	SENIOR	0.20		
GRPMEN	LOWQUAL	0.10	151.98	.0001
	HIQUAL	- 0.10		

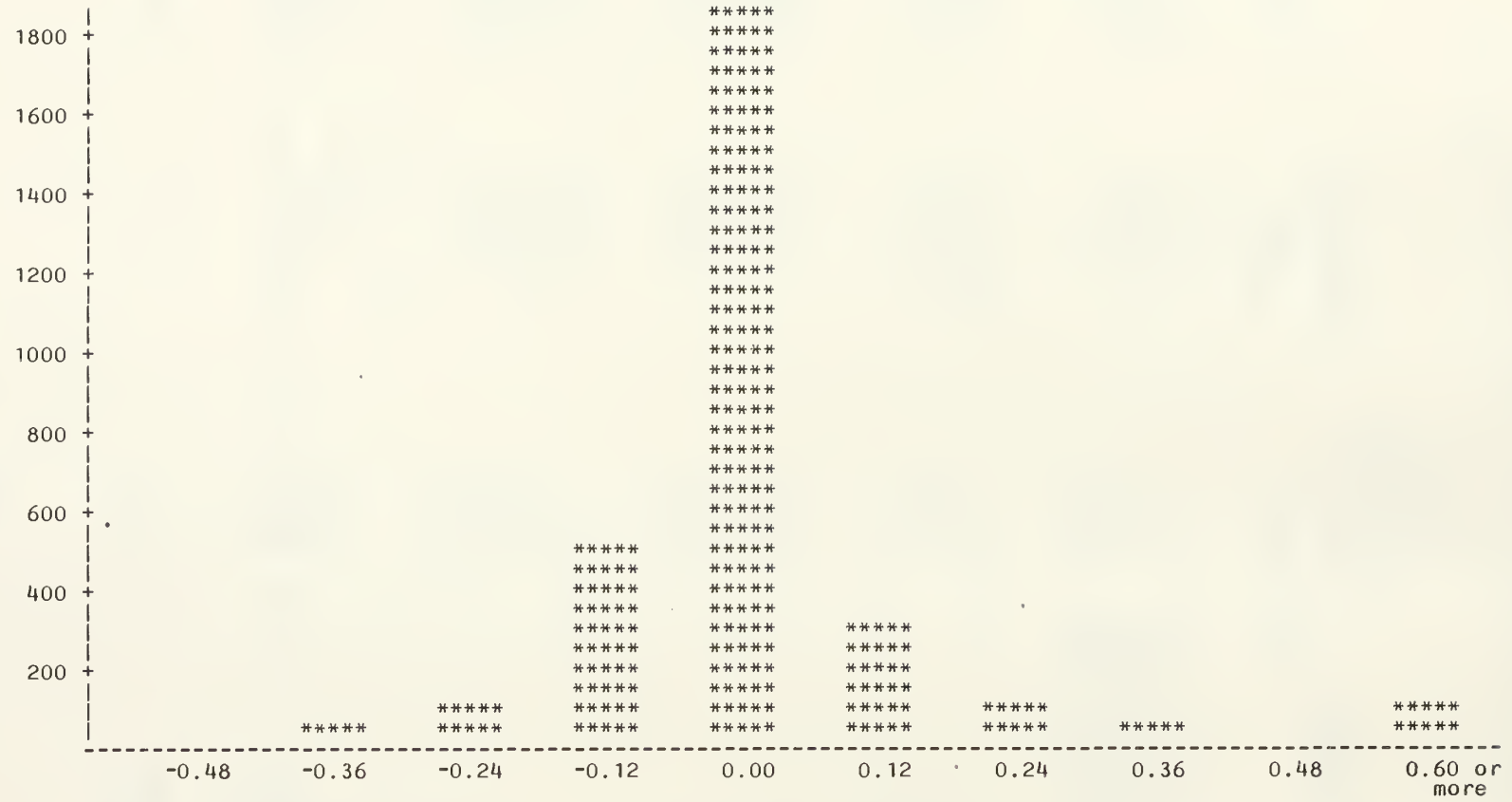

Figure 7

Frequency Bar Chart of Residuals for Model V

V. DISCUSSION

Unplanned DEP attrition, besides increasing the possibility of not attaining assigned goal can cause high quality individuals to be placed in less-than-optimal immediate openings, increasing the chance of later attrition at the Recruit Training Center or beyond. If DEP attrition could be predicted through this research and some pre-planning, then the CLASP system could function as it was designed, and only the applicants who wanted to go on active duty immediately would be accessed directly. The others are placed in well suited programs reserved on future dates. As stated before, a certain level of DEP attrition is healthy as some of these individuals would have dropped out anyway at RTC. But perhaps there are a significant number of upper mental group, high school diploma graduates (HSDGs) who drop out of DEP who would have had successful tours in the Navy if their DEP time was shortened somewhat. Much time, effort and other resources go into getting that initial enlistment contract. Attrition of these individuals should be monitored closely and analyzed.

The F value for lack of fit for each of the five models was a small number approaching one. This suggests that all the models had a good fit. All variables except MIN in each of the models showed a significant relationship to DEP attrition. Looking at R^2 as an indication of the model's

worth, Model IV has the highest R^2, R^2 = .95. This high R^2 is probably due to the strong influence of time in DEP. As an enlistee's official time in DEP increases, month by month, attrition risk rises predictably. Model IV is the only model that looks at time in DEP broken down into 12 separate months. Model III and Model V also look at time in DEP, but in these models time in DEP is broken down into only four quarterly categories. In Model III and Model V, their R^2s were .84 and .74 respectively. Models I and II, which did not include time in DEP, had very low R^2s (R^2 = .16 and R^2 = .06 respectively).

The residual plots for each of the five models are found in Figures 3 through 7. These bar charts depict the number of cells in each interval of residual amounts. The residuals are the difference between the actual and predicted attrition rates. The more cells close to the zero interval, the better the model predicts attrition. All the models show a significant number of cells in or close to the zero interval. Models III and V have a string of cells in several of the residual intervals from two tenths to nine tenths away from zero in either direction. This indicates that in several cells in these models, actual and predicted attrition differed from 20 to 90 percent. Some of these large differences can be caused by small cell which can lead to inaccurate predicted attrition rate. Overall, the residual graphs show that the models do a good job of predicting attrition.

The first three models looked at personal characteristics, such as age, graduation status, race, and mental group. The first model looks at the personal characteristics just mentioned. MIN turned out not to be significant in predicting attrition, but the only comparison was between blacks and whites. If ethnic codes were available, then hispanic attrition could have been figured also. There is a chance hispanics may have been significant due to the strong family ties in hispanic families. MIN was dropped from the second model. All the variables in Model II were significant in predicting DEP attrition. The high attrition risk categories in the personal characteristic models were mental groups one and two, non-grads and seniors, and aged 19, 20 and 21 plus individuals. The most interesting results of this study and the ones that differentiate DEP attrition results from other attrition (i.e., 12 months, RTC, etc.) results is that mental groups one and two independent of all other effects are high attrition risks.

In the third model, quarterly time in DEP was added to the variables used in Model II. Model III is the most practical and useful to the recruiting managers. All these variables are known at the time of enlistment into DEP. For instance, if an individual is a 20 year old nongraduate, mental group one who is being put into DEP for seven months, his predicted percent chance of attrition is 23 percent. This is found by looking at Appendix C on page 90 and

locating this particular group of variable categories in one cell and then reading the projected attrition rate for that cell. Each individual in a particular month in DEP can be assigned a projected attrition rate. Then those rates could be averaged to predict the attrition rate for that cohort. This process could be computerized. Also CLASP could be programmed not to accept a high attrition risk set of personal characteristics and time in DEP combinations. For example, an 18 year old, HSDG mental group two DEP member who is put in DEP for 10-12 months has a predicted attrition rate of 23 percent. If CLASP only allowed him to be put in DEP up to six months, his attrition risk would be reduced to seven percent or less.

Model IV looks at DEPSIZE, AREA and also time in DEP, but time in DEP is broken down into 12 months vice four quarters. By being placed in DEP for seven to 12 months, DEP members run a consistently increasing risk of dropping out of DEP. These particular results must be viewed with caution. Actual dropping out of DEP in the later months may not be the only thing being measured here. As explained in previous chapters, motivation exists to slide DEP losses into longer DEP time in the system to avoid a current DEP attrite from being subtracted from contracts enlisted in the current month. New contract goal is hard enough to achieve without having to absorb DEP losses. The maximum amount of time that a DEP member can be moved in the system is to 12 months DEP time. There is evidence that this often occurs, since

attrition percentages double from 11 to 12 months in DEP (see Table 12). Therefore, the consistent increase in DEP attrition, as a function of time in DEP, may only be partially due to actual attrition occurring in those latter months. In this study time in DEP, figured in months, was computed from the final update of that information on each individual in the MEPCOM file. The number of times his DEP date was changed is unknown. The actual figuring of a DEP member's time in DEP was done by taking the difference in months, between the month and year he entered DEP, and the month and year he was projected to or actually went on active duty.

The variable DEPSIZE in Model IV is by definition totally correlated with fiscal year. In each DEPSIZE range is the actual DEPSIZE of each of the four fiscal years studied. Therefore, the two fiscal years with higher predicted attrition rates were 1981 and 1982. Fiscal year was not used as a variable because a range of DEPSIZE could occur again but a fiscal year does not recur. Since this variable is capturing the happenings of a fiscal year beyond just rational DEPSIZE range, many other factors could be affecting its behavior factors, such as the recruiting goal and environment, especially economic conditions nation-wide. Also, this variable would be difficult to use on a district level. Perhaps district level DEPSIZE ranges would be a more useful variable to use for predicting attrition at the district level. But the EPO needs to predict attrition at

the beginning of a fiscal year, when he is making out his adjusted new contract goals. At that time it would be difficult for him to project what his next fiscal year DEPSIZE would be to use it in predicting attrition.

Model IV indicated through negative parameter estimates that areas seven and eight have higher predicted attrition rates than other areas. This may be due to regional economic conditions unique to those areas. The most influential predictor in Model IV is months in DEP.

The results of Model V are consistent with the results of each variable category in the smaller models. High attrition-risk categories include: 1) mental group one and two, which are grouped as one in this model, 2) non-grads 3) aged 18, 19 and 21 plus, (4) those in DEP over 7 months, 5) those entering the Navy in areas seven and eight, and 6) those coming in during a fiscal year whose DEPSIZE was in the range of 47,000-54,000, and 54,000-61,000. Each high risk factor in Model V is also depicted as a high risk factor in the other models. However, this model is awkward to use to predict attrition because of the DEPSIZE variable for reasons previously explained concerning Model IV.

Predicting and understanding the variables that indicate a higher attrition risk could be useful to recruiting managers. High DEP-attrition-risk applicants, such as those in mental groups one and two, non-grads and aged 19, 20 and 21 plus could be placed in DEP only very short intervals to reduce DEP attrition. Although seniors are indicated as a

DEP attrition risk, they usually need to be placed in DEP some times over three months, awaiting graduation. Recruiting seniors in the late spring for short DEP times would not gain enough in reduced DEP attrition to offset the senior market share that would be lost to pre-arranged-post-high school-civilian jobs and to other services recruiting earlier in the year.

The EPO could figure his expected monthly DEP attrition by determining the composition of the personal characteristics and time in DEP of each DEP member in a particular future month and then using Appendix C or a computer program to figure projected DEP attrition for that month. For example, the EPO has 60 DEP members due to ship in June, whose characteristics are as follows: 1) thirty of them were seniors, mental group 2, aged 18 and they all have been in DEP seven to nine months; 2) twenty of them were HSDG, mental group 3A, aged 19 and they have been in DEP four months to six months; and 3) ten of them were non-high school diploma graduates, mental group 3B, aged 20 and have been in DEP from four to six months. In a real situation, each individual would probably have a separate set of characteristics and thus each would have an individual attrition probability. But for this example, the predicted DEP attrition rate for group one, the seniors, using Appendix C page 81, is ten percent. Group two's predicted DEP attrition rate is seven percent and the predicted DEP attrition rate for the non-grads, group three, is twelve percent. The averaged

attrition rate for the entire group is 9.35 percent. At this attrition rate, the EPO would have to plan to replace about six of the 60 June DEP members by their shipping date. If DEP attrition could be predicted for three succeeding months, then the monthly DEP pool could be padded accurately so there would be no unplanned DEP losses. Therefore, only an ideal number of direct shippers would be required in any given month.

In general, the results of this study should prove useful in controlling the costs of DEP attrition by identifying attrition risk factors and improving DEP management by aiding in predicting DEP attrition rates.

APPENDIX A

DEP ATTRITION BY NRD, FISCAL YEARS
AND INDIVIDUAL QUALITY VARIABLES

Table A-1

NRD DEP Attrition Rates by Fiscal Years 1980-81 and 1982-83

NRD	1980-1981 Attrition Rates	1982-1983 Attrition-Rates
Albany, NY	6.41	10.07
Boston, MA	6.31	10.49
Buffalo, NY	6.51	10.81
New York, NY	6.62	12.20
Harrisburg, PA	5.52	8.32
Louisville, KY	6.73	9.47
Richmond, VA	5.99	8.99
Washington, DC	6.84	9.57
Montgomery, AL	7.04	9.25
Columbia, SC	5.01	11.00
Jacksonville, FL	4.99	9.55
Atlanta, GA	4.58	10.10
Nashville, TN	7.11	10.65
Raleigh, NC	6.24	12.23
Cleveland, OH	5.80	9.08
Columbus, OH	6.61	8.69
Philadelphia, PA	5.12	11.29
Pittsburg, PA	6.23	7.41
Chicago, IL	8.59	11.67
Michigan	8.59	10.30
Indianapolis, IN	5.64	9.67
St. Louis, MO	7.82	10.26
Denver, CO	6.09	10.03
Kansas City, MO	6.51	10.54
Minneapolis, MN	5.77	7.43
Omaha, NE	5.49	11.62
Albuquerque, NM	7.56	10.88
Dallas, TX	7.53	10.72
Houston, TX	6.35	12.84
Little Rock AR	6.97	12.45
New Orleans, LA	6.97	10.28
Los Angeles, CA	8.02	18.06
Portland, OR	7.09	12.38
San Francisco, CA	10.38	15.79
Seattle, WA	6.45	10.91
San Diego, CA	6.84	11.32
San Antonio, TX	8.46	11.99
Memphis, TN	6.63	9.83
Miami, FL	5.84	11.33
Milwaukee, WI	5.14	7.50
New Jersey	7.88	10.84

Table A-2

DEP Attrition and Size of DEP by Fiscal Year

	DEP Attrition	DEP Size
1980	6.13	34,894
1981	7.08	46,116
1982	10.12	59,312
1983	11.00	53,963

Table A-3

Quality of DEP Attrition and DEPSIZE
by
Fiscal Years 1980-1981 and 1982-1983

1980-1981

	Attrition Percent	DEPSIZE	Percent DEPSIZE
High Qual	75.63	38,397	79.98
Low Qual	24.37	9,614	20.02

1982-1983

High Qual	84.32	50,587	87.25
Low Qual	15.68	7,392	12.75

APPENDIX B

ACTUAL AND PREDICTED ATTRITION AND RESIDUALS FOR EACH CELL OF MODEL II

SAMPLE	AGE	GRDSTA	MEN	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.00000	0.93071	-0.93071
				PROB	2	1.00000	0.06929	0.93071
2	17	COL	3A		1	1.79176	2.71189	-0.920131
				PROB	1	1.00000	0.93772	0.06228
				PROB	2	0.00000	0.06228	-0.06228
3	17	COL	3B		1	1.60944	2.6999	-1.09046
				PROB	1	0.83333	0.93702	-0.10369
				PROB	2	0.16667	0.06298	0.10369
4	17	HSDG	1		1	3.0061	2.5092	0.496894
				PROB	1	0.95285	0.92478	0.02806
				PROB	2	0.04715	0.07522	-0.02806
5	17	HSDG	2		1	2.68907	2.62919	0.059878
				PROB	1	0.93638	0.93272	0.00366
				PROB	2	0.06362	0.06728	-0.00366
6	17	HSDG	3A		1	2.84848	2.74341	0.105067
				PROB	1	0.94524	0.93954	0.00570
				PROB	2	0.05476	0.06046	-0.00570
7	17	HSDG	3B		1	2.77528	2.73142	0.0438559
				PROB	1	0.94133	0.93886	0.00247
				PROB	2	0.05867	0.06114	-0.00247
8	17	HSDG	4		1	2.87168	2.775	0.096678
				PROB	1	0.94643	0.94131	0.00512
				PROB	2	0.05357	0.05869	-0.00512
9	17	NONGRD	1		1	1.35403	2.09562	-0.74159
				PROB	1	0.79479	0.89048	-0.09569
				PROB	2	0.20521	0.10952	0.09569
10	17	NONGRD	2		1	2.35235	2.21561	0.136734
				PROB	1	0.91312	0.90164	0.01148
				PROB	2	0.08688	0.09836	-0.01148
11	17	NONGRD	3A		1	2.5273	2.32984	0.197463
				PROB	1	0.92603	0.91132	0.01472
				PROB	2	0.07397	0.08868	-0.01472
12	17	NONGRD	3B		1	2.45033	2.31785	0.132487
				PROB	1	0.92059	0.91034	0.01024
				PROB	2	0.07941	0.08966	-0.01024
13	17	NONGRD	4		1	1.88569	2.36142	-0.475733
				PROB	1	0.86826	0.91384	-0.04557

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.13174	0.08616	0.04557
14	17	SENIOR	1		1	1.9472	2.15582	-0.20862
				PROB	1	0.87514	0.89621	-0.02107
				PROB	2	0.12486	0.10379	0.02107
15	17	SENIOR	2		1	2.22282	2.2758	-0.0529848
				PROB	1	0.90228	0.90685	-0.00457
				PROB	2	0.09772	0.09315	0.00457
16	17	SENIOR	3A		1	2.39207	2.39003	0.00204184
				PROB	1	0.91622	0.91606	0.00016
				PROB	2	0.08378	0.08394	-0.00016
17	17	SENIOR	3B		1	2.38088	2.37804	0.00284613
				PROB	1	0.91536	0.91514	0.00022
				PROB	2	0.08464	0.08486	-0.00022
18	17	SENIOR	4		1	2.27204	2.42162	-0.149575
				PROB	1	0.90653	0.91846	-0.01193
				PROB	2	0.09347	0.08154	0.01193
19	18	COL	1		1	0.693147	2.41492	-1.72178
				PROB	1	1.00000	0.91796	0.08204
				PROB	2	0.00000	0.08204	-0.08204
20	18	COL	2		1	1.38629	2.53491	-1.14862
				PROB	1	1.00000	0.92655	0.07345
				PROB	2	0.00000	0.07345	-0.07345
21	18	COL	3A		1	3.09104	2.64914	0.441907
				PROB	1	1.00000	0.93396	0.06604
				PROB	2	0.00000	0.06604	-0.06604
22	18	COL	3B		1	2.19722	2.63714	-0.43992
				PROB	1	0.90000	0.93321	-0.03321
				PROB	2	0.10000	0.06679	0.03321
23	18	COL	4		1	1.94591	2.68072	-0.734813
				PROB	1	0.87500	0.93588	-0.06088
				PROB	2	0.12500	0.06412	0.06088
24	18	HSDG	1		1	2.52487	2.44645	0.0784227
				PROB	1	0.92587	0.92030	0.00557
				PROB	2	0.07413	0.07970	-0.00557
25	18	HSDG	2		1	2.57426	2.56643	0.00782996
				PROB	1	0.92919	0.92867	0.00052
				PROB	2	0.07081	0.07133	-0.00052
26	18	HSDG	3A		1	2.59505	2.68066	-0.0856051
				PROB	1	0.93054	0.93588	-0.00533
				PROB	2	0.06946	0.06412	0.00533
27	18	HSDG	3B		1	2.62045	2.66867	-0.0482152
				PROB	1	0.93217	0.93515	-0.00299
				PROB	2	0.06783	0.06485	0.00299
28	18	HSDG	4		1	2.70084	2.71225	-0.0114009

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.93708	0.93775	-0.00067
				PROB	2	0.06292	0.06225	0.00067
29	18	NONGRD	1		1	1.55748	2.03287	-0.47539
				PROB	1	0.82599	0.88421	-0.05821
				PROB	2	0.17401	0.11579	0.05821
30	18	NONGRD	2		1	2.1133	2.15286	-0.0395606
				PROB	1	0.89219	0.89594	-0.00375
				PROB	2	0.10781	0.10406	0.00375
31	18	NONGRD	3A		1	2.20972	2.26708	-0.0573653
				PROB	1	0.90112	0.90611	-0.00500
				PROB	2	0.09888	0.09389	0.00500
32	18	NONGRD	3B		1	2.23922	2.25509	-0.0158676
				PROB	1	0.90372	0.90509	-0.00137
				PROB	2	0.09628	0.09491	0.00137
33	18	NONGRD	4		1	2.41866	2.29867	0.119989
				PROB	1	0.91824	0.90877	0.00947
				PROB	2	0.08176	0.09123	-0.00947
34	18	SENIOR	1		1	2.07981	2.09306	-0.0132503
				PROB	1	0.88893	0.89023	-0.00130
				PROB	2	0.11107	0.10977	0.00130
35	18	SENIOR	2		1	2.20725	2.21305	-.00580388
				PROB	1	0.90090	0.90142	-0.00052
				PROB	2	0.09910	0.09858	0.00052
36	18	SENIOR	3A		1	2.38802	2.32727	0.0607507
				PROB	1	0.91591	0.91111	0.00480
				PROB	2	0.08409	0.08889	-0.00480
37	18	SENIOR	3B		1	2.43353	2.31528	0.11825
				PROB	1	0.91935	0.91013	0.00921
				PROB	2	0.08065	0.08987	-0.00921
38	18	SENIOR	4		1	2.32604	2.35886	-0.0328242
				PROB	1	0.91101	0.91364	-0.00263
				PROB	2	0.08899	0.08636	0.00263
39	19	COL	1		1	2.30259	2.31752	-0.0149361
				PROB	1	1.00000	0.91032	0.08968
				PROB	2	0.00000	0.08968	-0.08968
40	19	COL	2		1	2.3979	2.43751	-0.0396145
				PROB	1	0.91667	0.91964	-0.00298
				PROB	2	0.08333	0.08036	0.00298
41	19	COL	3A		1	3.2581	2.55173	0.706363
				PROB	1	0.96296	0.92769	0.03527
				PROB	2	0.03704	0.07231	-0.03527
42	19	COL	3B		1	2.31025	2.53974	-0.229495
				PROB	1	0.90972	0.92688	-0.01716
				PROB	2	0.09028	0.07312	0.01716

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
43	19	COL	4		1	1.83258	2.58332	-0.75074
				PROB	1	0.86207	0.92978	-0.06771
				PROB	2	0.13793	0.07022	0.06771
44	19	HSDG	1		1	2.47714	2.34904	0.1281
				PROB	1	0.92252	0.91286	0.00967
				PROB	2	0.07748	0.08714	-0.00967
45	19	HSDG	2		1	2.46763	2.46903	-.00140053
				PROB	1	0.92184	0.92194	-0.00010
				PROB	2	0.07816	0.07806	0.00010
46	19	HSDG	3A		1	2.56202	2.58326	-0.0212357
				PROB	1	0.92838	0.92978	-0.00140
				PROB	2	0.07162	0.07022	0.00140
47	19	HSDG	3B		1	2.57211	2.57127	.000847694
				PROB	1	0.92905	0.92899	0.00006
				PROB	2	0.07095	0.07101	-0.00006
48	19	HSDG	4		1	2.78617	2.61484	0.171323
				PROB	1	0.94192	0.93181	0.01011
				PROB	2	0.05808	0.06819	-0.01011
49	19	NONGRD	1		1	1.2102	1.93547	-0.725263
				PROB	1	0.77033	0.87385	-0.10352
				PROB	2	0.22967	0.12615	0.10352
50	19	NONGRD	2		1	2.07596	2.05546	0.020508
				PROB	1	0.88854	0.88650	0.00205
				PROB	2	0.11146	0.11350	-0.00205
51	19	NONGRD	3A		1	2.18066	2.16968	0.0109836
				PROB	1	0.89850	0.89749	0.00101
				PROB	2	0.10150	0.10251	-0.00101
52	19	NONGRD	3B		1	1.91324	2.15769	-0.244449
				PROB	1	0.87138	0.89639	-0.02500
				PROB	2	0.12862	0.10361	0.02500
53	19	NONGRD	4		1	2.89037	2.20127	0.689105
				PROB	1	0.94737	0.90036	0.04701
				PROB	2	0.05263	0.09964	-0.04701
54	19	SENIOR	1		1	2.12276	1.99566	0.127101
				PROB	1	0.89310	0.88034	0.01276
				PROB	2	0.10690	0.11966	-0.01276
55	19	SENIOR	2		1	2.18938	2.11565	0.0737336
				PROB	1	0.89929	0.89241	0.00688
				PROB	2	0.10071	0.10759	-0.00688
56	19	SENIOR	3A		1	2.26646	2.22987	0.0365844
				PROB	1	0.90606	0.90290	0.00316
				PROB	2	0.09394	0.09710	-0.00316
57	19	SENIOR	3B		1	2.26665	2.21788	0.0487719
				PROB	1	0.90608	0.90184	0.00423

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.09392	0.09816	-0.00423
58	19	SENIOR	4		1	2.66259	2.26146	0.401128
				PROB	1	0.93478	0.90563	0.02915
				PROB	2	0.06522	0.09437	-0.02915
59	20	COL	1		1	1.20397	2.22764	-1.02367
				PROB	1	0.76923	0.90270	-0.13347
				PROB	2	0.23077	0.09730	0.13347
60	20	COL	2		1	1.90954	2.34763	-0.438087
				PROB	1	0.87097	0.91275	-0.04178
				PROB	2	0.12903	0.08725	0.04178
61	20	COL	3A		1	3.06805	2.46185	0.606199
				PROB	1	0.95556	0.92142	0.03413
				PROB	2	0.04444	0.07858	-0.03413
62	20	COL	3B		1	2.66113	2.44986	0.21127
				PROB	1	0.93469	0.92055	0.01414
				PROB	2	0.06531	0.07945	-0.01414
63	20	COL	4		1	2.66259	2.49344	0.169146
				PROB	1	0.93478	0.92368	0.01110
				PROB	2	0.06522	0.07632	-0.01110
64	20	HSDG	1		1	2.47	2.25916	0.210834
				PROB	1	0.92201	0.90544	0.01657
				PROB	2	0.07799	0.09456	-0.01657
65	20	HSDG	2		1	2.34113	2.37915	-0.0380208
				PROB	1	0.91223	0.91522	-0.00300
				PROB	2	0.08777	0.08478	0.00300
66	20	HSDG	3A		1	2.31059	2.49338	-0.182792
				PROB	1	0.90975	0.92368	-0.01393
				PROB	2	0.09025	0.07632	0.01393
67	20	HSDG	3B		1	2.49499	2.48139	0.0136021
				PROB	1	0.92379	0.92283	0.00096
				PROB	2	0.07621	0.07717	-0.00096
68	20	HSDG	4		1	2.55108	2.52496	0.0261115
				PROB	1	0.92765	0.92587	0.00177
				PROB	2	0.07235	0.07413	-0.00177
69	20	NONGRD	1		1	1.62746	1.84559	-0.218131
				PROB	1	0.83582	0.86361	-0.02779
				PROB	2	0.16418	0.13639	0.02779
70	20	NONGRD	2		1	1.98047	1.96558	0.0148953
				PROB	1	0.87873	0.87714	0.00160
				PROB	2	0.12127	0.12286	-0.00160
71	20	NONGRD	3A		1	2.26868	2.0798	0.188884
				PROB	1	0.90625	0.88892	0.01733
				PROB	2	0.09375	0.11108	-0.01733
72	20	NONGRD	3B		1	2.10936	2.06781	0.0415543

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.89181	0.88773	0.00408
				PROB	2	0.10819	0.11227	-0.00408
73	20	NONGRD	4		1	3.98898	2.11139	1.8776
				PROB	1	0.98182	0.89201	0.08981
				PROB	2	0.01818	0.10799	-0.08981
74	20	SENIOR	1		1	2.02595	1.90578	0.120173
				PROB	1	0.88350	0.87054	0.01295
				PROB	2	0.11650	0.12946	-0.01295
75	20	SENIOR	2		1	2.45674	2.02577	0.430968
				PROB	1	0.92105	0.88348	0.03758
				PROB	2	0.07895	0.11652	-0.03758
76	20	SENIOR	3A		1	1.57819	2.13999	-0.561807
				PROB	1	0.82895	0.89473	-0.06578
				PROB	2	0.17105	0.10527	0.06578
77	20	SENIOR	3B		1	1.63142	2.128	-0.496585
				PROB	2	0.16364	0.10640	0.05723
				PROB	1	1.00000	0.89767	0.10233
79	21	COL	1		1	2.43142	1.9508	0.480614
				PROB	2	0.08081	0.12447	-0.04366
				PROB	1	0.90741	0.88803	0.01938
81	21	COL	3A		1	2.1496	2.18502	-0.03542
				PROB	2	0.10437	0.10110	0.00326
				PROB	1	0.89931	0.89780	0.00151
83	21	COL	4		1	2.07596	2.2166	-0.140641
				PROB	2	0.11146	0.09827	0.01319
				PROB	1	0.90625	0.87893	0.02732
85	21	HSDG	2		1	2.12846	2.10232	0.0261453
				PROB	2	0.10636	0.10887	-0.00251
				PROB	1	0.89617	0.90172	-0.00556
87	21	HSDG	3B		1	2.16283	2.20455	-0.0417183
				PROB	2	0.10314	0.09934	0.00380
				PROB	1	0.90778	0.90449	0.00330
89	21	NONGRD	1		1	1.09861	1.56875	-0.470137
				PROB	2	0.25000	0.17239	0.07761
				PROB	1	0.83918	0.84406	-0.00488
91	21	NONGRD	3A		1	1.98627	1.80296	0.183307
				PROB	2	0.12065	0.14149	-0.02084
				PROB	1	0.85471	0.85705	-0.00233
93	21	NONGRD	4		1	1.9157	1.83455	0.0811467
				PROB	2	0.12834	0.13770	-0.00935
				PROB	1	0.71429	0.83602	-0.12174
				PROB	2	0.08333	0.13434	-0.05100

APPENDIX C

ACTUAL AND PREDICTED ATTRITION AND RESIDUALS

FOR EACH CELL OF MODEL III

SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL	
1	17	COL	2	3QT		1	-0.693147	2.46559	-3.15874	EMPTY CELL
					PROB	1	0.00000	0.92169	-0.92169	
					PROB	2	1.00000	0.07831	0.92169	
2	17	COL	3A	2QT		1	1.38629	3.07253	-1.68624	
					PROB	1	1.00000	0.95575	0.04425	
					PROB	2	0.00000	0.04425	-0.04425	
3	17	COL	3A	3QT		1	0.693147	2.59601	-1.90287	
					PROB	1	1.00000	0.93060	0.06940	
					PROB	2	0.00000	0.06940	-0.06940	
4	17	COL	3B	2QT		1	1.38629	3.1465	-1.76021	
					PROB	1	1.00000	0.95877	0.04123	
					PROB	2	0.00000	0.04123	-0.04123	
5	17	COL	3B	3QT		1	1.38629	2.66998	-1.28369	
					PROB	1	1.00000	0.93523	0.06477	
					PROB	2	0.00000	0.06477	-0.06477	
6	17	COL	3B	4QT		1	0	1.72997	-1.72997	
					PROB	1	0.50000	0.84941	-0.34941	
					PROB	2	0.50000	0.15059	0.34941	
7	17	HSDG	1	1QT		1	3.63759	3.61333	0.0242544	
					PROB	1	0.97436	0.97375	0.00061	
					PROB	2	0.02564	0.02625	-0.00061	
8	17	HSDG	1	2QT		1	3.28341	2.79718	0.486233	
					PROB	1	0.96386	0.94252	0.02133	
					PROB	2	0.03614	0.05748	-0.02133	
9	17	HSDG	1	3QT		1	3.00568	2.32066	0.685023	
					PROB	1	0.95283	0.91057	0.04226	
					PROB	2	0.04717	0.08943	-0.04226	
10	17	HSDG	1	4QT		1	1.44692	1.38065	0.0662687	
					PROB	1	0.80952	0.79910	0.01043	
					PROB	2	0.19048	0.20090	-0.01043	
11	17	HSDG	2	1QT		1	4.01338	3.75938	0.254	
					PROB	1	0.98225	0.97723	0.00502	
					PROB	2	0.01775	0.02277	-0.00502	
12	17	HSDG	2	2QT		1	2.98231	2.94322	0.0390844	
					PROB	1	0.95177	0.94994	0.00183	
					PROB	2	0.04823	0.05006	-0.00183	

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
13	17	HSDG	2	3QT		1	2.08866	2.4667	-0.378045
					PROB	1	0.88980	0.92177	-0.03198
					PROB	2	0.11020	0.07823	0.03198
14	17	HSDG	2	4QT		1	1.61682	1.52669	0.0901241
					PROB	1	0.83436	0.82152	0.01283
					PROB	2	0.16564	0.17848	-0.01283
15	17	HSDG	3A	1QT		1	4.08177	3.88979	0.191972
					PROB	1	0.98340	0.97996	0.00344
					PROB	2	0.01660	0.02004	-0.00344
16	17	HSDG	3A	2QT		1	3.2581	3.07364	0.184454
					PROB	1	0.96296	0.95579	0.00717
					PROB	2	0.03704	0.04421	-0.00717
17	17	HSDG	3A	3QT		1	2.5066	2.59712	-0.0905217
					PROB	1	0.92460	0.93068	-0.00607
					PROB	2	0.07540	0.06932	0.00607
18	17	HSDG	3A	4QT		1	1.56398	1.65711	-0.0931364
					PROB	1	0.82692	0.83985	-0.01293
					PROB	2	0.17308	0.16015	0.01293
19	17	HSDG	3B	1QT		1	3.9542	3.96376	-.00956371
					PROB	1	0.98119	0.98136	-0.00018
					PROB	2	0.01881	0.01864	0.00018
20	17	HSDG	3B	2QT		1	3.14169	3.14761	-.00592485
					PROB	1	0.95858	0.95881	-0.00023
					PROB	2	0.04142	0.04119	0.00023
21	17	HSDG	3B	3QT		1	2.60037	2.67109	-0.0707171
					PROB	1	0.93089	0.93530	-0.00441
					PROB	2	0.06911	0.06470	0.00441
22	17	HSDG	3B	4QT		1	1.67147	1.73108	-0.0596068
					PROB	1	0.84177	0.84955	-0.00778
					PROB	2	0.15823	0.15045	0.00778
23	17	HSDG	4	1QT		1	3.86073	3.95299	-0.0922587
					PROB	1	0.97938	0.98116	-0.00178
					PROB	2	0.02062	0.01884	0.00178
24	17	HSDG	4	2QT		1	3.27714	3.13684	0.140307
					PROB	1	0.96364	0.95839	0.00525
					PROB	2	0.03636	0.04161	-0.00525
25	17	HSDG	4	3QT		1	3.68888	2.66032	1.02856
					PROB	1	0.97561	0.93464	0.04097
					PROB	2	0.02439	0.06536	-0.04097
26	17	HSDG	4	4QT		1	1.23214	1.72031	-0.488163
					PROB	1	0.77419	0.84817	-0.07397
					PROB	2	0.22581	0.15183	0.07397
27	17	NONGRD	1	1QT		1	2.16905	3.08578	-0.916724
					PROB	1	0.89744	0.95630	-0.05887

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.10256	0.04370	0.05887
28	17	NONGRD	1	2QT		1	1.72277	2.26963	-0.546861
					PROB	1	0.84848	0.90633	-0.05785
					PROB	2	0.15152	0.09367	0.05785
29	17	NONGRD	1	3QT		1	1.3622	1.79311	-0.430909
					PROB	1	0.79612	0.85731	-0.06119
					PROB	2	0.20388	0.14269	0.06119
30	17	NONGRD	1	4QT		1	0.930475	0.853096	0.0773791
					PROB	1	0.71717	0.70122	0.01596
					PROB	2	0.28283	0.29878	-0.01596
31	17	NONGRD	2	1QT		1	3.02678	3.23182	-0.205038
					PROB	1	0.95377	0.96201	-0.00824
					PROB	2	0.04623	0.03799	0.00824
32	17	NONGRD	2	2QT		1	2.34455	2.41567	-0.0711216
					PROB	1	0.91250	0.91801	-0.00551
					PROB	2	0.08750	0.08199	0.00551
33	17	NONGRD	2	3QT		1	2.0336	1.93915	0.094446
					PROB	1	0.88428	0.87426	0.01002
					PROB	2	0.11572	0.12574	-0.01002
34	17	NONGRD	2	4QT		1	1.40534	0.99914	0.406203
					PROB	1	0.80303	0.73089	0.07214
					PROB	2	0.19697	0.26911	-0.07214
35	17	NONGRD	3A	1QT		1	3.0855	3.36224	-0.276741
					PROB	1	0.95629	0.96650	-0.01021
					PROB	2	0.04371	0.03350	0.01021
36	17	NONGRD	3A	2QT		1	2.29873	2.54609	-0.247357
					PROB	1	0.90877	0.92731	-0.01854
					PROB	2	0.09123	0.07269	0.01854
37	17	NONGRD	3A	3QT		1	2.05964	2.06957	-.00992826
					PROB	1	0.88692	0.88791	-0.00099
					PROB	2	0.11308	0.11209	0.00099
38	17	NONGRD	3A	4QT		1	1.84785	1.12956	0.718291
					PROB	1	0.86387	0.75576	0.10812
					PROB	2	0.13613	0.24424	-0.10812
39	17	NONGRD	3B	1QT		1	3.16618	3.43621	-0.27003
					PROB	1	0.95954	0.96882	-0.00928
					PROB	2	0.04046	0.03118	0.00928
40	17	NONGRD	3B	2QT		1	2.54999	2.62006	-0.0700638
					PROB	1	0.92757	0.93214	-0.00457
					PROB	2	0.07243	0.06786	0.00457
41	17	NONGRD	3B	3QT		1	2.30434	2.14354	0.160803
					PROB	1	0.90924	0.89506	0.01417
					PROB	2	0.09076	0.10494	-0.01417
42	17	NONGRD	3B	4QT		1	1.61865	1.20353	0.415128

DESIGN					RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	1	0.83461	0.76915	0.06546
					PROB	2	0.16539	0.23085	-0.06546
43	17	NONGRD	4	1QT		1	4.40672	3.42543	0.981285
					PROB	1	1.00000	0.96849	0.03151
					PROB	2	0.00000	0.03151	-0.03151
44	17	NONGRD	4	2QT		1	2.07944	2.60928	-0.529842
					PROB	1	0.88889	0.93146	-0.04257
					PROB	2	0.11111	0.06854	0.04257
45	17	NONGRD	4	3QT		1	2.83321	2.13276	0.700451
					PROB	1	0.94444	0.89405	0.05040
					PROB	2	0.05556	0.10595	-0.05040
46	17	NONGRD	4	4QT		1	0.693147	1.19275	-0.499606
					PROB	1	0.66667	0.76723	-0.10057
					PROB	2	0.33333	0.23277	0.10057
47	17	SENIOR	1	1QT		1	3.157	3.71388	-0.556879
					PROB	1	0.95918	0.97620	-0.01701
					PROB	2	0.04082	0.02380	0.01701
48	17	SENIOR	1	2QT		1	2.63701	2.89773	-0.260715
					PROB	1	0.93321	0.94773	-0.01453
					PROB	2	0.06679	0.05227	0.01453
49	17	SENIOR	1	3QT		1	1.99276	2.42121	-0.428446
					PROB	1	0.88004	0.91843	-0.03840
					PROB	2	0.11996	0.08157	0.03840
50	17	SENIOR	1	4QT		1	1.38795	1.4812	-0.0932497
					PROB	1	0.80026	0.81475	-0.01449
					PROB	2	0.19974	0.18525	0.01449
51	17	SENIOR	2	1QT		1	3.3751	3.85992	-0.484821
					PROB	1	0.96692	0.97937	-0.01245
					PROB	2	0.03308	0.02063	0.01245
52	17	SENIOR	2	2QT		1	2.79452	3.04377	-0.249249
					PROB	1	0.94238	0.95451	-0.01213
					PROB	2	0.05762	0.04549	0.01213
53	17	SENIOR	2	3QT		1	2.69972	2.56725	0.132471
					PROB	1	0.93701	0.92872	0.00829
					PROB	2	0.06299	0.07128	-0.00829
54	17	SENIOR	2	4QT		1	1.62037	1.62724	-.00687497
					PROB	1	0.83485	0.83579	-0.00095
					PROB	2	0.16515	0.16421	0.00095
55	17	SENIOR	3A	1QT		1	4.02386	3.99034	0.033521
					PROB	1	0.98243	0.98184	0.00059
					PROB	2	0.01757	0.01816	-0.00059
56	17	SENIOR	3A	2QT		1	3.09933	3.17419	-0.0748602
					PROB	1	0.95687	0.95985	-0.00299
					PROB	2	0.04313	0.04015	0.00299

	DESIGN			RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
57	17	SENIOR	3A	3QT		1	2.66199	2.69767	-0.0356778
					PROB	1	0.93475	0.93689	-0.00214
					PROB	2	0.06525	0.06311	0.00214
58	17	SENIOR	3A	4QT		1	1.8943	1.75766	0.136639
					PROB	1	0.86924	0.85292	0.01633
					PROB	2	0.13076	0.14708	-0.01633
59	17	SENIOR	3B	1QT		1	3.93834	4.06431	-0.125969
					PROB	1	0.98089	0.98312	-0.00222
					PROB	2	0.01911	0.01688	0.00222
60	17	SENIOR	3B	2QT		1	3.32538	3.24816	0.0772195
					PROB	1	0.96529	0.96261	0.00268
					PROB	2	0.03471	0.03739	-0.00268
61	17	SENIOR	3B	3QT		1	2.65215	2.77164	-0.119482
					PROB	1	0.93414	0.94112	-0.00698
					PROB	2	0.06586	0.05888	0.00698
62	17	SENIOR	3B	4QT		1	1.8609	1.83163	0.0292757
					PROB	1	0.86540	0.86196	0.00345
					PROB	2	0.13460	0.13804	-0.00345
63	17	SENIOR	4	1QT		1	5.3845	4.05354	1.33096
					PROB	1	1.00000	0.98294	0.01706
					PROB	2	0.00000	0.01706	-0.01706
64	17	SENIOR	4	2QT		1	2.88728	3.23739	-0.350105
					PROB	1	0.94721	0.96222	-0.01500
					PROB	2	0.05279	0.03778	0.01500
65	17	SENIOR	4	3QT		1	2.45153	2.76086	-0.309337
					PROB	1	0.92067	0.94052	-0.01985
					PROB	2	0.07933	0.05948	0.01985
66	17	SENIOR	4	4QT		1	1.65823	1.82085	-0.162627
					PROB	1	0.84000	0.86067	-0.02067
					PROB	2	0.16000	0.13933	0.02067
67	18	COL	1	2QT		1	0.693147	2.45198	-1.75884
					PROB	1	1.00000	0.92071	0.07929
					PROB	2	0.00000	0.07929	-0.07929
68	18	COL	2	1QT		1	0.693147	3.41418	-2.72103
					PROB	1	1.00000	0.96814	0.03186
					PROB	2	0.00000	0.03186	-0.03186
69	18	COL	2	3QT		1	0.693147	2.12151	-1.42836
					PROB	1	1.00000	0.89298	0.10702
					PROB	2	0.00000	0.10702	-0.10702
70	18	COL	3A	1QT		1	2.63906	3.5446	-0.905538
					PROB	1	1.00000	0.97193	0.02807
					PROB	2	0.00000	0.02807	-0.02807
71	18	COL	3A	2QT		1	0.693147	2.72845	-2.0353
					PROB	1	1.00000	0.93868	0.06132

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.00000	0.06132	-0.06132
72	18	COL	3A	3QT		1	0.693147	2.25192	-1.55878
					PROB	1	1.00000	0.90482	0.09518
					PROB	2	0.00000	0.09518	-0.09518
73	18	COL	3A	4QT		1	1.38629	1.31191	0.0743802
					PROB	1	1.00000	0.78783	0.21217
					PROB	2	0.00000	0.21217	-0.21217
74	18	COL	3B	1QT		1	2.48491	3.61856	-1.13366
					PROB	1	0.92308	0.97388	-0.05080
					PROB	2	0.07692	0.02612	0.05080
75	18	COL	3B	2QT		1	2.30259	2.80241	-0.499828
					PROB	1	0.90909	0.94281	-0.03372
					PROB	2	0.09091	0.05719	0.03372
76	18	COL	3B	3QT		1	1.79176	2.32589	-0.534132
					PROB	1	1.00000	0.91100	0.08900
					PROB	2	0.00000	0.08900	-0.08900
77	18	COL	3B	4QT		1	0.693147	1.38588	-0.692735
					PROB	1	0.66667	0.79993	-0.13327
					PROB	2	0.33333	0.20007	0.13327
78	18	COL	4	1QT		1	2.30259	3.60779	-1.30521
					PROB	1	1.00000	0.97360	0.02640
					PROB	2	0.00000	0.02640	-0.02640
79	18	COL	4	2QT		1	0	2.79164	-2.79164
					PROB	1	0.50000	0.94222	-0.44222
					PROB	2	0.50000	0.05778	0.44222
80	18	COL	4	3QT		1	0.693147	2.31512	-1.62197
					PROB	1	1.00000	0.91012	0.08988
					PROB	2	0.00000	0.08988	-0.08988
81	18	HSDG	1	1QT		1	3.11352	3.26924	-0.155728
					PROB	1	0.95745	0.96336	-0.00591
					PROB	2	0.04255	0.03664	0.00591
82	18	HSDG	1	2QT		1	2.49713	2.45309	0.0440344
					PROB	1	0.92394	0.92079	0.00315
					PROB	2	0.07606	0.07921	-0.00315
83	18	HSDG	1	3QT		1	2.02438	1.97657	0.0478112
					PROB	1	0.88333	0.87832	0.00502
					PROB	2	0.11667	0.12168	-0.00502
84	18	HSDG	1	4QT		1	1.10931	1.03656	0.0727462
					PROB	1	0.75200	0.73819	0.01381
					PROB	2	0.24800	0.26181	-0.01381
85	18	HSDG	2	1QT		1	3.3786	3.41529	-0.036683
					PROB	1	0.96703	0.96818	-0.00115
					PROB	2	0.03297	0.03182	0.00115
86	18	HSDG	2	2QT		1	2.47706	2.59914	-0.122073

	DESIGN			RESPONSE FUNCTION				
SAMPLE	AGE GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.92252	0.93081	-0.00829
				PROB	2	0.07748	0.06919	0.00829
87	18 HSDG	2	3QT		1	2.29896	2.12261	0.17635
				PROB	1	0.90879	0.89308	0.01571
				PROB	2	0.09121	0.10692	-0.01571
88	18 HSDG	2	4QT		1	0.98905	1.18261	-0.193555
				PROB	1	0.72890	0.76542	-0.03652
				PROB	2	0.27110	0.23458	0.03652
89	18 HSDG	3A	1QT		1	3.4286	3.5457	-0.117108
				PROB	1	0.96859	0.97196	-0.00337
				PROB	2	0.03141	0.02804	0.00337
90	18 HSDG	3A	2QT		1	2.81787	2.72955	0.0883173
				PROB	1	0.94363	0.93875	0.00489
				PROB	2	0.05637	0.06125	-0.00489
91	18 HSDG	3A	3QT		1	2.21226	2.25303	-0.0407698
				PROB	1	0.90135	0.90491	-0.00357
				PROB	2	0.09865	0.09509	0.00357
92	18 HSDG	3A	4QT		1	1.0047	1.31302	-0.308321
				PROB	1	0.73198	0.78802	-0.05604
				PROB	2	0.26802	0.21198	0.05604
93	18 HSDG	3B	1QT		1	3.44196	3.61967	-0.177714
				PROB	1	0.96899	0.97391	-0.00492
				PROB	2	0.03101	0.02609	0.00492
94	18 HSDG	3B	2QT		1	2.88235	2.80352	0.0788314
				PROB	1	0.94697	0.94287	0.00410
				PROB	2	0.05303	0.05713	-0.00410
95	18 HSDG	3B	3QT		1	2.4408	2.327	0.113804
				PROB	1	0.91989	0.91109	0.00880
				PROB	2	0.08011	0.08891	-0.00880
96	18 HSDG	3B	4QT		1	1.09322	1.38699	-0.29377
				PROB	1	0.74899	0.80011	-0.05112
				PROB	2	0.25101	0.19989	0.05112
97	18 HSDG	4	1QT		1	3.13549	3.6089	-0.473405
				PROB	1	0.95833	0.97363	-0.01530
				PROB	2	0.04167	0.02637	0.01530
98	18 HSDG	4	2QT		1	3.20053	2.79275	0.407778
				PROB	1	0.96085	0.94228	0.01857
				PROB	2	0.03915	0.05772	-0.01857
99	18 HSDG	4	3QT		1	2.44569	2.31623	0.129459
				PROB	1	0.92025	0.91021	0.01003
				PROB	2	0.07975	0.08979	-0.01003
100	18 HSDG	4	4QT		1	1.17865	1.37622	-0.197563
				PROB	1	0.76471	0.79838	-0.03368
				PROB	2	0.23529	0.20162	0.03368

DESIGN					RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
101	18	NONGRD	1	1QT		1	3.06805	2.74169	0.326364
					PROB	1	0.95556	0.93944	0.01611
					PROB	2	0.04444	0.06056	-0.01611
102	18	NONGRD	1	2QT		1	1.79176	1.92554	-0.133779
					PROB	1	0.85714	0.87275	-0.01561
					PROB	2	0.14286	0.12725	0.01561
103	18	NONGRD	1	3QT		1	1.40464	1.44902	-0.0443731
					PROB	1	0.80292	0.80985	-0.00693
					PROB	2	0.19708	0.19015	0.00693
104	18	NONGRD	1	4QT		1	0.807091	0.509007	0.298084
					PROB	1	0.69149	0.62457	0.06692
					PROB	2	0.30851	0.37543	-0.06692
105	18	NONGRD	2	1QT		1	2.99989	2.88773	0.112158
					PROB	1	0.95257	0.94724	0.00533
					PROB	2	0.04743	0.05276	-0.00533
106	18	NONGRD	2	2QT		1	2.07739	2.07158	0.00580824
					PROB	1	0.88869	0.88811	0.00058
					PROB	2	0.11131	0.11189	-0.00058
107	18	NONGRD	2	3QT		1	1.70011	1.59506	0.105055
					PROB	1	0.84555	0.83133	0.01422
					PROB	2	0.15445	0.16867	-0.01422
108	18	NONGRD	2	4QT		1	0.739132	0.655051	0.0840812
					PROB	1	0.67681	0.65815	0.01866
					PROB	2	0.32319	0.34185	-0.01866
109	18	NONGRD	3A	1QT		1	2.81286	3.01815	-0.205288
					PROB	1	0.94337	0.95339	-0.01002
					PROB	2	0.05663	0.04661	0.01002
110	18	NONGRD	3A	2QT		1	2.14811	2.202	-0.0538925
					PROB	1	0.89549	0.90043	-0.00494
					PROB	2	0.10451	0.09957	0.00494
111	18	NONGRD	3A	3QT		1	1.58045	1.72548	-0.145028
					PROB	1	0.82927	0.84883	-0.01956
					PROB	2	0.17073	0.15117	0.01956
112	18	NONGRD	3A	4QT		1	0.940983	0.785469	0.155514
					PROB	1	0.71930	0.68686	0.03244
					PROB	2	0.28070	0.31314	-0.03244
113	18	NONGRD	3B	1QT		1	2.75311	3.09212	-0.339009
					PROB	1	0.94009	0.95657	-0.01648
					PROB	2	0.05991	0.04343	0.01648
114	18	NONGRD	3B	2QT		1	2.25438	2.27597	-0.0215852
					PROB	1	0.90503	0.90687	-0.00184
					PROB	2	0.09497	0.09313	0.00184
115	18	NONGRD	3B	3QT		1	2.03204	1.79945	0.232593
					PROB	1	0.88412	0.85808	0.02604

DESIGN					RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.11588	0.14192	-0.02604
116	18	NONGRD	3B	4QT		1	1.16857	0.859437	0.309134
					PROB	1	0.76289	0.70254	0.06034
					PROB	2	0.23711	0.29746	-0.06034
117	18	NONGRD	4	1QT		1	3.65066	3.08135	0.569313
					PROB	1	0.97468	0.95612	0.01857
					PROB	2	0.02532	0.04388	-0.01857
118	18	NONGRD	4	2QT		1	2.3979	2.26519	0.1327
					PROB	1	0.91667	0.90595	0.01071
					PROB	2	0.08333	0.09405	-0.01071
119	18	NONGRD	4	3QT		1	1.4816	1.78867	-0.307069
					PROB	1	0.81481	0.85676	-0.04195
					PROB	2	0.18519	0.14324	0.04195
120	18	NONGRD	4	4QT		1	1.54045	0.848664	0.691781
					PROB	1	0.82353	0.70029	0.12324
					PROB	2	0.17647	0.29971	-0.12324
121	18	SENIOR	1	1QT		1	3.27714	3.36979	-0.0926462
					PROB	1	0.96364	0.96675	-0.00311
					PROB	2	0.03636	0.03325	0.00311
122	18	SENIOR	1	2QT		1	2.32133	2.55364	-0.232313
					PROB	1	0.91063	0.92782	-0.01719
					PROB	2	0.08937	0.07218	0.01719
123	18	SENIOR	1	3QT		1	2.04716	2.07712	-0.0299547
					PROB	1	0.88566	0.88866	-0.00300
					PROB	2	0.11434	0.11134	0.00300
124	18	SENIOR	1	4QT		1	1.27032	1.13711	0.133208
					PROB	1	0.78080	0.75715	0.02365
					PROB	2	0.21920	0.24285	-0.02365
125	18	SENIOR	2	1QT		1	3.20883	3.51583	-0.307009
					PROB	1	0.96117	0.97113	-0.00997
					PROB	2	0.03883	0.02887	0.00997
126	18	SENIOR	2	2QT		1	2.78089	2.69968	0.0812035
					PROB	1	0.94163	0.93701	0.00463
					PROB	2	0.05837	0.06299	-0.00463
127	18	SENIOR	2	3QT		1	2.36006	2.22316	0.136901
					PROB	1	0.91373	0.90231	0.01142
					PROB	2	0.08627	0.09769	-0.01142
128	18	SENIOR	2	4QT		1	1.30479	1.28315	0.0216411
					PROB	1	0.78664	0.78299	0.00365
					PROB	2	0.21336	0.21701	-0.00365
129	18	SENIOR	3A	1QT		1	3.54509	3.64625	-0.101161
					PROB	1	0.97194	0.97457	-0.00263
					PROB	2	0.02806	0.02543	0.00263
130	18	SENIOR	3A	2QT		1	2.86505	2.8301	0.034952

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	1	0.94609	0.94428	0.00181
					PROB	2	0.05391	0.05572	-0.00181
131	18	SENIOR	3A	3QT		1	2.63613	2.35358	0.282545
					PROB	1	0.93315	0.91322	0.01993
					PROB	2	0.06685	0.08678	-0.01993
132	18	SENIOR	3A	4QT		1	1.48085	1.41357	0.0672819
					PROB	1	0.81470	0.80433	0.01037
					PROB	2	0.18530	0.19567	-0.01037
133	18	SENIOR	3B	1QT		1	3.42792	3.72022	-0.2923
					PROB	1	0.96857	0.97634	-0.00778
					PROB	2	0.03143	0.02366	0.00778
134	18	SENIOR	3B	2QT		1	2.83725	2.90407	-0.0668236
					PROB	1	0.94466	0.94805	-0.00339
					PROB	2	0.05534	0.05195	0.00339
135	18	SENIOR	3B	3QT		1	2.4375	2.42755	0.00995598
					PROB	1	0.91964	0.91890	0.00074
					PROB	2	0.08036	0.08110	-0.00074
136	18	SENIOR	3B	4QT		1	1.6505	1.48754	0.162956
					PROB	1	0.83896	0.81571	0.02325
					PROB	2	0.16104	0.18429	-0.02325
137	18	SENIOR	4	1QT		1	3.8712	3.70945	0.161753
					PROB	1	0.97959	0.97609	0.00350
					PROB	2	0.02041	0.02391	-0.00350
138	18	SENIOR	4	2QT		1	2.73274	2.8933	-0.160554
					PROB	1	0.93893	0.94751	-0.00858
					PROB	2	0.06107	0.05249	0.00858
139	18	SENIOR	4	3QT		1	1.94591	2.41678	-0.470865
					PROB	1	0.87500	0.91810	-0.04310
					PROB	2	0.12500	0.08190	0.04310
140	18	SENIOR	4	4QT		1	1.26025	1.47677	-0.216512
					PROB	1	0.77907	0.81408	-0.03501
					PROB	2	0.22093	0.18592	0.03501
141	19	COL	1	1QT		1	1.79176	3.09254	-1.30078
					PROB	1	1.00000	0.95658	0.04342
					PROB	2	0.00000	0.04342	-0.04342
142	19	COL	1	2QT		1	0.693147	2.27639	-1.58325
					PROB	1	1.00000	0.90690	0.09310
					PROB	2	0.00000	0.09310	-0.09310
143	19	COL	1	3QT		1	0.693147	1.79987	-1.10672
					PROB	1	1.00000	0.85813	0.14187
					PROB	2	0.00000	0.14187	-0.14187
144	19	COL	2	1QT		1	3.2581	3.23859	0.0195088
					PROB	1	1.00000	0.96226	0.03774
					PROB	2	0.00000	0.03774	-0.03774

	DESIGN				RESPONSE FUNCTION			
	SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE	ACTUAL	PREDICTED	RESIDUAL
	145	19	COL	2	2QT	1	2.77259	2.42244	0.350152
						PROB 1	1.00000	0.91852	0.08148
						PROB 2	0.00000	0.08148	-0.08148
	146	19	COL	2	3QT	1	-0.693147	1.94592	-2.63906
						PROB 1	0.33333	0.87500	-0.54167
						PROB 2	0.66667	0.12500	0.54167
	147	19	COL	3A	1QT	1	2.99573	3.36901	-0.373273
						PROB 1	1.00000	0.96672	0.03328
						PROB 2	0.00000	0.03328	-0.03328
	148	19	COL	3A	2QT	1	2.99573	2.55286	0.442877
						PROB 1	1.00000	0.92777	0.07223
						PROB 2	0.00000	0.07223	-0.07223
	149	19	COL	3A	3QT	1	2.48491	2.07633	0.408573
						PROB 1	1.00000	0.88858	0.11142
						PROB 2	0.00000	0.11142	-0.11142
	150	19	COL	3A	4QT	1	-0.693147	1.13632	-1.82947
EMPTY CELL									
						PROB 1	0.00000	0.75700	-0.75700
						PROB 2	1.00000	0.24300	0.75700
	151	19	COL	3B	1QT	1	3.3322	3.44297	-0.110769
						PROB 1	0.96552	0.96902	-0.00350
						PROB 2	0.03448	0.03098	0.00350
	152	19	COL	3B	2QT	1	3.04452	2.62682	0.417699
						PROB 1	0.95455	0.93257	0.02198
						PROB 2	0.04545	0.06743	-0.02198
	153	19	COL	3B	3QT	1	2.07944	2.1503	-0.07086
						PROB 1	0.88889	0.89570	-0.00681
						PROB 2	0.11111	0.10430	0.00681
	154	19	COL	3B	4QT	1	0.405465	1.21029	-0.804827
						PROB 1	0.60000	0.77035	-0.17035
						PROB 2	0.40000	0.22965	0.17035
	155	19	COL	4	1QT	1	2.30259	3.4322	-1.12962
						PROB 1	0.90909	0.96870	-0.05960
						PROB 2	0.09091	0.03130	0.05960
	156	19	COL	4	2QT	1	1.60944	2.61605	-1.00661
						PROB 1	0.83333	0.93189	-0.09855
						PROB 2	0.16667	0.06811	0.09855
	157	19	COL	4	3QT	1	1.60944	2.13953	-0.53009
						PROB 1	0.83333	0.89469	-0.06135
						PROB 2	0.16667	0.10531	0.06135
	158	19	HSDG	1	1QT	1	3.27629	3.09365	0.182634
						PROB 1	0.96361	0.95663	0.00698
						PROB 2	0.03639	0.04337	-0.00698
	159	19	HSDG	1	2QT	1	2.39253	2.2775	0.115031

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.91626	0.90700	0.00926
				PROB	2	0.08374	0.09300	-0.00926
160	19 HSDG	1	3QT		1	1.8563	1.80098	0.0553174
				PROB	1	0.86486	0.85827	0.00660
				PROB	2	0.13514	0.14173	-0.00660
161	19 HSDG	1	4QT		1	0.928713	0.860971	0.0677418
				PROB	1	0.71681	0.70286	0.01395
				PROB	2	0.28319	0.29714	-0.01395
162	19 HSDG	2	1QT		1	3.23427	3.2397	-.00542964
				PROB	1	0.96210	0.96230	-0.00020
				PROB	2	0.03790	0.03770	0.00020
163	19 HSDG	2	2QT		1	2.41358	2.42355	-.00996414
				PROB	1	0.91786	0.91861	-0.00075
				PROB	2	0.08214	0.08139	0.00075
164	19 HSDG	2	3QT		1	2.23061	1.94702	0.283587
				PROB	1	0.90296	0.87512	0.02784
				PROB	2	0.09704	0.12488	-0.02784
165	19 HSDG	2	4QT		1	0.835956	1.00702	-0.17106
				PROB	1	0.69761	0.73244	-0.03482
				PROB	2	0.30239	0.26756	0.03482
166	19 HSDG	3A	1QT		1	3.2024	3.37011	-0.167718
				PROB	1	0.96092	0.96676	-0.00583
				PROB	2	0.03908	0.03324	0.00583
167	19 HSDG	3A	2QT		1	2.76085	2.55396	0.206889
				PROB	1	0.94052	0.92784	0.01268
				PROB	2	0.05948	0.07216	-0.01268
168	19 HSDG	3A	3QT		1	2.17417	2.07744	0.0967265
				PROB	1	0.89791	0.88869	0.00921
				PROB	2	0.10209	0.11131	-0.00921
169	19 HSDG	3A	4QT		1	1.04878	1.13743	-0.0886532
				PROB	1	0.74054	0.75721	-0.01667
				PROB	2	0.25946	0.24279	0.01667
170	19 HSDG	3B	1QT		1	3.53881	3.44408	0.0947318
				PROB	1	0.97177	0.96905	0.00272
				PROB	2	0.02823	0.03095	-0.00272
171	19 HSDG	3B	2QT		1	2.64727	2.62793	0.0193332
				PROB	1	0.93384	0.93264	0.00120
				PROB	2	0.06616	0.06736	-0.00120
172	19 HSDG	3B	3QT		1	2.2689	2.15141	0.117485
				PROB	1	0.90627	0.89580	0.01047
				PROB	2	0.09373	0.10420	-0.01047
173	19 HSDG	3B	4QT		1	1.21466	1.2114	0.00326188
				PROB	1	0.77112	0.77055	0.00058
				PROB	2	0.22888	0.22945	-0.00058

	DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
174	19	HSDG	4	1QT		1	3.57422	3.43331	0.140907
					PROB	1	0.97273	0.96873	0.00400
					PROB	2	0.02727	0.03127	-0.00400
175	19	HSDG	4	2QT		1	3.15864	2.61716	0.541477
					PROB	1	0.95925	0.93196	0.02729
					PROB	2	0.04075	0.06804	-0.02729
176	19	HSDG	4	3QT		1	2.6174	2.14064	0.476759
					PROB	1	0.93197	0.89479	0.03718
					PROB	2	0.06803	0.10521	-0.03718
177	19	HSDG	4	4QT		1	0.836248	1.20063	-0.36438
					PROB	1	0.69767	0.76864	-0.07096
					PROB	2	0.30233	0.23136	0.07096
178	19	NONGRD	1	1QT		1	2.09495	2.5661	-0.471153
					PROB	1	0.89041	0.92865	-0.03824
					PROB	2	0.10959	0.07135	0.03824
179	19	NONGRD	1	2QT		1	1.20397	1.74995	-0.545976
					PROB	1	0.76923	0.85195	-0.08272
					PROB	2	0.23077	0.14805	0.08272
180	19	NONGRD	1	3QT		1	0.847298	1.27343	-0.426129
					PROB	1	0.70000	0.78133	-0.08133
					PROB	2	0.30000	0.21867	0.08133
181	19	NONGRD	1	4QT		1	0.0953102	0.333417	-0.238107
					PROB	1	0.52381	0.58259	-0.05878
					PROB	2	0.47619	0.41741	0.05878
182	19	NONGRD	2	1QT		1	2.80336	2.71214	0.0912177
					PROB	1	0.94286	0.93774	0.00512
					PROB	2	0.05714	0.06226	-0.00512
183	19	NONGRD	2	2QT		1	1.49995	1.89599	-0.396038
					PROB	1	0.81757	0.86944	-0.05187
					PROB	2	0.18243	0.13056	0.05187
184	19	NONGRD	2	3QT		1	1.48948	1.41947	0.0700083
					PROB	1	0.81600	0.80526	0.01074
					PROB	2	0.18400	0.19474	-0.01074
185	19	NONGRD	2	4QT		1	0.76214	0.479461	0.282679
					PROB	1	0.68182	0.61762	0.06420
					PROB	2	0.31818	0.38238	-0.06420
186	19	NONGRD	3A	1QT		1	2.70805	2.84256	-0.13451
					PROB	1	0.93750	0.94493	-0.00743
					PROB	2	0.06250	0.05507	0.00743
187	19	NONGRD	3A	2QT		1	1.98592	2.02641	-0.0404945
					PROB	1	0.87931	0.88354	-0.00423
					PROB	2	0.12069	0.11646	0.00423
188	19	NONGRD	3A	3QT		1	1.3622	1.54989	-0.187691
					PROB	1	0.79612	0.82490	-0.02878

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.20388	0.17510	0.02878
189	19	NONGRD	3A	4QT		1	0.351398	0.609879	-0.258481
					PROB	1	0.58696	0.64791	-0.06096
					PROB	2	0.41304	0.35209	0.06096
190	19	NONGRD	3B	1QT		1	2.69598	2.91653	-0.220551
					PROB	1	0.93679	0.94866	-0.01187
					PROB	2	0.06321	0.05134	0.01187
191	19	NONGRD	3B	2QT		1	1.84219	2.10038	-0.258188
					PROB	1	0.86321	0.89094	-0.02773
					PROB	2	0.13679	0.10906	0.02773
192	19	NONGRD	3B	3QT		1	1.36276	1.62386	-0.261093
					PROB	1	0.79621	0.83533	-0.03912
					PROB	2	0.20379	0.16467	0.03912
193	19	NONGRD	3B	4QT		1	0.490206	0.683847	-0.193641
					PROB	1	0.62016	0.66460	-0.04444
					PROB	2	0.37984	0.33540	0.04444
194	19	NONGRD	4	1QT		1	3.7612	2.90576	0.855445
					PROB	1	0.97727	0.94813	0.02914
					PROB	2	0.02273	0.05187	-0.02914
195	19	NONGRD	4	2QT		1	3.21888	2.0896	1.12927
					PROB	1	0.96154	0.88989	0.07165
					PROB	2	0.03846	0.11011	-0.07165
196	19	NONGRD	4	3QT		1	2.0149	1.61308	0.40182
					PROB	1	0.88235	0.83384	0.04851
					PROB	2	0.11765	0.16616	-0.04851
197	19	NONGRD	4	4QT		1	1.94591	0.673074	1.27284
					PROB	1	0.87500	0.66219	0.21281
					PROB	2	0.12500	0.33781	-0.21281
198	19	SENIOR	1	1QT		1	3.07438	3.1942	-0.119826
					PROB	1	0.95582	0.96062	-0.00479
					PROB	2	0.04418	0.03938	0.00479
199	19	SENIOR	1	2QT		1	2.62829	2.37805	0.250235
					PROB	1	0.93266	0.91514	0.01752
					PROB	2	0.06734	0.08486	-0.01752
200	19	SENIOR	1	3QT		1	1.84892	1.90153	-0.0526107
					PROB	1	0.86400	0.87006	-0.00606
					PROB	2	0.13600	0.12994	0.00606
201	19	SENIOR	1	4QT		1	0.828693	0.961519	-0.132827
					PROB	1	0.69608	0.72343	-0.02735
					PROB	2	0.30392	0.27657	0.02735
202	19	SENIOR	2	1QT		1	3.36153	3.34024	0.0212875
					PROB	1	0.96648	0.96578	0.00070
					PROB	2	0.03352	0.03422	-0.00070
203	19	SENIOR	2	2QT		1	2.64476	2.52409	0.120661

	DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	1	0.93369	0.92581	0.00787
					PROB	2	0.06631	0.07419	-0.00787
204	19	SENIOR	2	3QT		1	2.12691	2.04757	0.0793358
					PROB	1	0.89349	0.88570	0.00779
					PROB	2	0.10651	0.11430	-0.00779
205	19	SENIOR	2	4QT		1	0.955511	1.10756	-0.152052
					PROB	1	0.72222	0.75167	-0.02945
					PROB	2	0.27778	0.24833	0.02945
206	19	SENIOR	3A	1QT		1	3.81771	3.47066	0.34705
					PROB	1	0.97849	0.96984	0.00865
					PROB	2	0.02151	0.03016	-0.00865
207	19	SENIOR	3A	2QT		1	3.03255	2.65451	0.378034
					PROB	1	0.95402	0.93429	0.01973
					PROB	2	0.04598	0.06571	-0.01973
208	19	SENIOR	3A	3QT		1	1.83406	2.17799	-0.343928
					PROB	1	0.86224	0.89826	-0.03601
					PROB	2	0.13776	0.10174	0.03601
209	19	SENIOR	3A	4QT		1	1.25895	1.23798	0.0209739
					PROB	1	0.77885	0.77521	0.00363
					PROB	2	0.22115	0.22479	-0.00363
210	19	SENIOR	3B	1QT		1	3.80666	3.54463	0.262032
					PROB	1	0.97826	0.97193	0.00633
					PROB	2	0.02174	0.02807	-0.00633
211	19	SENIOR	3B	2QT		1	2.64999	2.72848	-0.0784938
					PROB	1	0.93401	0.93869	-0.00468
					PROB	2	0.06599	0.06131	0.00468
212	19	SENIOR	3B	3QT		1	2.30259	2.25196	0.0506267
					PROB	1	0.90909	0.90482	0.00427
					PROB	2	0.09091	0.09518	-0.00427
213	19	SENIOR	3B	4QT		1	0.939548	1.31195	-0.372402
					PROB	1	0.71901	0.78784	-0.06883
					PROB	2	0.28099	0.21216	0.06883
214	19	SENIOR	4	1QT		1	3.58352	3.53386	0.0496614
					PROB	1	1.00000	0.97164	0.02836
					PROB	2	0.00000	0.02836	-0.02836
215	19	SENIOR	4	2QT		1	3.09104	2.71771	0.373335
					PROB	1	1.00000	0.93806	0.06194
					PROB	2	0.00000	0.06194	-0.06194
216	19	SENIOR	4	3QT		1	1.94591	2.24119	-0.295275
					PROB	1	0.87500	0.90389	-0.02889
					PROB	2	0.12500	0.09611	0.02889
217	19	SENIOR	4	4QT		1	1.25276	1.30118	-0.0484131
					PROB	1	0.77778	0.78603	-0.00826
					PROB	2	0.22222	0.21397	0.00826

	DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
218	20	COL	1	1QT		1	0.693147	3.01532	-2.32217
					PROB	1	0.66667	0.95326	-0.28659
					PROB	2	0.33333	0.04674	0.28659
219	20	COL	1	2QT		1	1.60944	2.19917	-0.589729
					PROB	1	0.83333	0.90017	-0.06684
					PROB	2	0.16667	0.09983	0.06684
220	20	COL	1	3QT		1	0.693147	1.72264	-1.0295
					PROB	1	0.66667	0.84847	-0.18180
					PROB	2	0.33333	0.15153	0.18180
221	20	COL	1	4QT		1	0.693147	0.782636	-0.0894884
					PROB	1	1.00000	0.68625	0.31375
					PROB	2	0.00000	0.31375	-0.31375
222	20	COL	2	1QT		1	1.89712	3.16136	-1.26424
					PROB	1	0.86957	0.95935	-0.08979
					PROB	2	0.13043	0.04065	0.08979
223	20	COL	2	2QT		1	1.38629	2.34521	-0.958916
					PROB	1	0.80000	0.91255	-0.11255
					PROB	2	0.20000	0.08745	0.11255
224	20	COL	2	3QT		1	1.79176	1.86869	-0.076929
					PROB	1	1.00000	0.86631	0.13369
					PROB	2	0.00000	0.13369	-0.13369
225	20	COL	3A	1QT		1	3.73767	3.29178	0.445891
					PROB	1	1.00000	0.96415	0.03585
					PROB	2	0.00000	0.03585	-0.03585
226	20	COL	3A	2QT		1	2.99573	2.47563	0.520104
					PROB	1	1.00000	0.92242	0.07758
					PROB	2	0.00000	0.07758	-0.07758
227	20	COL	3A	3QT		1	1.38629	1.99911	-0.612812
					PROB	1	0.80000	0.88070	-0.08070
					PROB	2	0.20000	0.11930	0.08070
228	20	COL	3A	4QT		1	2.07944	1.0591	1.02034
					PROB	1	0.88889	0.74252	0.14637
					PROB	2	0.11111	0.25748	-0.14637
229	20	COL	3B	1QT		1	4.10264	3.36575	0.736896
					PROB	1	0.98374	0.96662	0.01712
					PROB	2	0.01626	0.03338	-0.01712
230	20	COL	3B	2QT		1	2.65676	2.5496	0.107161
					PROB	1	0.93443	0.92755	0.00688
					PROB	2	0.06557	0.07245	-0.00688
231	20	COL	3B	3QT		1	1.8563	2.07307	-0.216777
					PROB	1	0.86486	0.88826	-0.02339
					PROB	2	0.13514	0.11174	0.02339
232	20	COL	3B	4QT		1	1.335	1.13307	0.201936
					PROB	1	0.79167	0.75640	0.03526

	DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.20833	0.24360	-0.03526
233	20	COL	4	1QT		1	2.30259	3.35497	-1.05239
					PROB	1	0.90909	0.96627	-0.05718
					PROB	2	0.09091	0.03373	0.05718
234	20	COL	4	2QT		1	2.63906	2.53882	0.100234
					PROB	1	1.00000	0.92682	0.07318
					PROB	2	0.00000	0.07318	-0.07318
235	20	COL	4	3QT		1	2.07944	2.0623	0.0171401
					PROB	1	1.00000	0.88718	0.11282
					PROB	2	0.00000	0.11282	-0.11282
236	20	COL	4	4QT		1	1.38629	1.12229	0.264002
					PROB	1	1.00000	0.75441	0.24559
					PROB	2	0.00000	0.24559	-0.24559
237	20	HSDG	1	1QT		1	3.07684	3.01643	0.0604094
					PROB	1	0.95593	0.95331	0.00262
					PROB	2	0.04407	0.04669	-0.00262
238	20	HSDG	1	2QT		1	2.48751	2.20028	0.287232
					PROB	1	0.92326	0.90027	0.02299
					PROB	2	0.07674	0.09973	-0.02299
239	20	HSDG	1	3QT		1	2.00459	1.72375	0.28084
					PROB	1	0.88128	0.84861	0.03267
					PROB	2	0.11872	0.15139	-0.03267
240	20	HSDG	1	4QT		1	1.06471	0.783744	0.280966
					PROB	1	0.74359	0.68649	0.05710
					PROB	2	0.25641	0.31351	-0.05710
241	20	HSDG	2	1QT		1	3.21473	3.16247	0.0522596
					PROB	1	0.96138	0.95940	0.00199
					PROB	2	0.03862	0.04060	-0.00199
242	20	HSDG	2	2QT		1	2.39927	2.34632	0.0529526
					PROB	1	0.91677	0.91264	0.00413
					PROB	2	0.08323	0.08736	-0.00413
243	20	HSDG	2	3QT		1	1.68419	1.8698	-0.185612
					PROB	1	0.84346	0.86643	-0.02298
					PROB	2	0.15654	0.13357	0.02298
244	20	HSDG	2	4QT		1	0.744819	0.929788	-0.184969
					PROB	1	0.67805	0.71703	-0.03898
					PROB	2	0.32195	0.28297	0.03898
245	20	HSDG	3A	1QT		1	2.9989	3.29289	-0.293986
					PROB	1	0.95252	0.96418	-0.01166
					PROB	2	0.04748	0.03582	0.01166
246	20	HSDG	3A	2QT		1	2.37812	2.47674	-0.0986165
					PROB	1	0.91514	0.92249	-0.00735
					PROB	2	0.08486	0.07751	0.00735
247	20	HSDG	3A	3QT		1	1.8104	2.00022	-0.189814

	DESIGN			RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	1	0.85941	0.88082	-0.02141
					PROB	2	0.14059	0.11918	0.02141
248	20	HSDG	3A	4QT		1	1.03445	1.06021	-0.0257558
					PROB	1	0.73778	0.74273	-0.00495
					PROB	2	0.26222	0.25727	0.00495
249	20	HSDG	3B	1QT		1	3.47846	3.36686	0.1116
					PROB	1	0.97007	0.96665	0.00342
					PROB	2	0.02993	0.03335	-0.00342
250	20	HSDG	3B	2QT		1	2.82652	2.55071	0.275815
					PROB	1	0.94409	0.92762	0.01647
					PROB	2	0.05591	0.07238	-0.01647
251	20	HSDG	3B	3QT		1	1.97155	2.07418	-0.102631
					PROB	1	0.87778	0.88837	-0.01059
					PROB	2	0.12222	0.11163	0.01059
252	20	HSDG	3B	4QT		1	1.12059	1.13417	-0.0135831
					PROB	1	0.75410	0.75661	-0.00251
					PROB	2	0.24590	0.24339	0.00251
253	20	HSDG	4	1QT		1	3.64632	3.35608	0.290237
					PROB	1	0.97458	0.96630	0.00827
					PROB	2	0.02542	0.03370	-0.00827
254	20	HSDG	4	2QT		1	2.69124	2.53993	0.151311
					PROB	1	0.93651	0.92689	0.00961
					PROB	2	0.06349	0.07311	-0.00961
255	20	HSDG	4	3QT		1	1.92038	2.06341	-0.143033
					PROB	1	0.87218	0.88730	-0.01512
					PROB	2	0.12782	0.11270	0.01512
256	20	HSDG	4	4QT		1	0.759105	1.1234	-0.364296
					PROB	1	0.68116	0.75462	-0.07346
					PROB	2	0.31884	0.24538	0.07346
257	20	NONGRD	1	1QT		1	1.75786	2.48887	-0.731014
					PROB	1	0.85294	0.92336	-0.07042
					PROB	2	0.14706	0.07664	0.07042
258	20	NONGRD	1	2QT		1	1.25276	1.67272	-0.419958
					PROB	1	0.77778	0.84194	-0.06416
					PROB	2	0.22222	0.15806	0.06416
259	20	NONGRD	1	3QT		1	1.50408	1.1962	0.307878
					PROB	1	0.81818	0.76785	0.05033
					PROB	2	0.18182	0.23215	-0.05033
260	20	NONGRD	1	4QT		1	2.07944	0.256191	1.82325
					PROB	1	1.00000	0.56370	0.43630
					PROB	2	0.00000	0.43630	-0.43630
261	20	NONGRD	2	1QT		1	3.37355	2.63492	0.73863
					PROB	1	0.96687	0.93308	0.03379
					PROB	2	0.03313	0.06692	-0.03379

	DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
262	20	NONGRD	2	2QT		1	1.6946	1.81877	-0.124169
					PROB	1	0.84483	0.86042	-0.01559
					PROB	2	0.15517	0.13958	0.01559
263	20	NONGRD	2	3QT		1	0.693147	1.34224	-0.649096
					PROB	1	0.66667	0.79286	-0.12619
					PROB	2	0.33333	0.20714	0.12619
264	20	NONGRD	2	4QT		1	-0.0540672	0.402234	-0.456301
					PROB	1	0.48649	0.59922	-0.11274
					PROB	2	0.51351	0.40078	0.11274
265	20	NONGRD	3A	1QT		1	2.70805	2.76533	-0.0572835
					PROB	1	0.93750	0.94077	-0.00327
					PROB	2	0.06250	0.05923	0.00327
266	20	NONGRD	3A	2QT		1	2.23683	1.94918	0.287651
					PROB	1	0.90351	0.87536	0.02815
					PROB	2	0.09649	0.12464	-0.02815
267	20	NONGRD	3A	3QT		1	1.45862	1.47266	-0.0140464
					PROB	1	0.81132	0.81346	-0.00214
					PROB	2	0.18868	0.18654	0.00214
268	20	NONGRD	3A	4QT		1	0.575364	0.532652	0.042712
					PROB	1	0.64000	0.63010	0.00990
					PROB	2	0.36000	0.36990	-0.00990
269	20	NONGRD	3B	1QT		1	2.95699	2.8393	0.11769
					PROB	1	0.95059	0.94476	0.00583
					PROB	2	0.04941	0.05524	-0.00583
270	20	NONGRD	3B	2QT		1	2.30259	2.02315	0.279434
					PROB	1	0.90909	0.88321	0.02588
					PROB	2	0.09091	0.11679	-0.02588
271	20	NONGRD	3B	3QT		1	1.18562	1.54663	-0.361006
					PROB	1	0.76596	0.82443	-0.05847
					PROB	2	0.23404	0.17557	0.05847
272	20	NONGRD	3B	4QT		1	0.583146	0.60662	-0.0234741
					PROB	1	0.64179	0.64717	-0.00538
					PROB	2	0.35821	0.35283	0.00538
273	20	NONGRD	4	1QT		1	4.12713	2.82853	1.29861
					PROB	1	1.00000	0.94420	0.05580
					PROB	2	0.00000	0.05580	-0.05580
274	20	NONGRD	4	2QT		1	3.17805	2.01238	1.16568
					PROB	1	1.00000	0.88209	0.11791
					PROB	2	0.00000	0.11791	-0.11791
275	20	NONGRD	4	3QT		1	2.99573	1.53586	1.45988
					PROB	1	1.00000	0.82286	0.17714
					PROB	2	0.00000	0.17714	-0.17714
276	20	NONGRD	4	4QT		1	0	0.595847	-0.595847
					PROB	1	0.50000	0.64471	-0.14471

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.50000	0.35529	0.14471
277	20	SENIOR	1	1QT		1	4.43082	3.11697	1.31384
					PROB	1	1.00000	0.95759	0.04241
					PROB	2	0.00000	0.04241	-0.04241
278	20	SENIOR	1	2QT		1	2.15948	2.30082	-0.141339
					PROB	1	0.89655	0.90895	-0.01239
					PROB	2	0.10345	0.09105	0.01239
279	20	SENIOR	1	3QT		1	2.07944	1.8243	0.25514
					PROB	1	0.88889	0.86108	0.02781
					PROB	2	0.11111	0.13892	-0.02781
280	20	SENIOR	1	4QT		1	0	0.884292	-0.884292
					PROB	1	0.50000	0.70771	-0.20771
					PROB	2	0.50000	0.29229	0.20771
281	20	SENIOR	2	1QT		1	4.78749	3.26302	1.52447
					PROB	1	1.00000	0.96314	0.03686
					PROB	2	0.00000	0.03686	-0.03686
282	20	SENIOR	2	2QT		1	3.49651	2.44687	1.04964
					PROB	1	0.97059	0.92033	0.05026
					PROB	2	0.02941	0.07967	-0.05026
283	20	SENIOR	2	3QT		1	1.8563	1.97035	-0.114047
					PROB	1	0.86486	0.87765	-0.01278
					PROB	2	0.13514	0.12235	0.01278
284	20	SENIOR	2	4QT		1	0.916291	1.03034	-0.114045
					PROB	1	0.71429	0.73698	-0.02270
					PROB	2	0.28571	0.26302	0.02270
285	20	SENIOR	3A	1QT		1	3.78419	3.39344	0.390754
					PROB	1	1.00000	0.96750	0.03250
					PROB	2	0.00000	0.03250	-0.03250
286	20	SENIOR	3A	2QT		1	1.79176	2.57729	-0.785526
					PROB	1	0.85714	0.92939	-0.07224
					PROB	2	0.14286	0.07061	0.07224
287	20	SENIOR	3A	3QT		1	1.60944	2.10076	-0.491325
					PROB	1	0.83333	0.89098	-0.05764
					PROB	2	0.16667	0.10902	0.05764
288	20	SENIOR	3A	4QT		1	0.133531	1.16075	-1.02722
					PROB	1	0.53333	0.76147	-0.22814
					PROB	2	0.46667	0.23853	0.22814
289	20	SENIOR	3B	1QT		1	3.61092	3.4674	0.143514
					PROB	1	0.97368	0.96975	0.00394
					PROB	2	0.02632	0.03025	-0.00394
290	20	SENIOR	3B	2QT		1	2.48491	2.65125	-0.166347
					PROB	1	0.92308	0.93409	-0.01101
					PROB	2	0.07692	0.06591	0.01101
291	20	SENIOR	3B	3QT		1	1.50408	2.17473	-0.670654

	DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	1	0.81818	0.89796	-0.07978
					PROB	2	0.18182	0.10204	0.07978
292	20	SENIOR	3B	4QT		1	0.167054	1.23472	-1.06767
					PROB	1	0.54167	0.77464	-0.23298
					PROB	2	0.45833	0.22536	0.23298
293	20	SENIOR	4	1QT		1	1.38629	3.45663	-2.07034
					PROB	1	1.00000	0.96943	0.03057
					PROB	2	0.00000	0.03057	-0.03057
294	20	SENIOR	4	2QT		1	1.79176	2.64048	-0.848721
					PROB	1	1.00000	0.93342	0.06658
					PROB	2	0.00000	0.06658	-0.06658
295	20	SENIOR	4	3QT		1	0.693147	2.16396	-1.47081
					PROB	1	1.00000	0.89697	0.10303
					PROB	2	0.00000	0.10303	-0.10303
296	21	COL	1	1QT		1	3.89182	2.72667	1.16515
					PROB	1	0.98000	0.93858	0.04142
					PROB	2	0.02000	0.06142	-0.04142
297	21	COL	1	2QT		1	2.36712	1.91052	0.456601
					PROB	1	0.91429	0.87108	0.04321
					PROB	2	0.08571	0.12892	-0.04321
298	21	COL	1	3QT		1	2.19722	1.434	0.763224
					PROB	1	0.90000	0.80752	0.09248
					PROB	2	0.10000	0.19248	-0.09248
299	21	COL	1	4QT		1	-1.09861	0.493991	-1.5926
					PROB	1	0.25000	0.62105	-0.37105
					PROB	2	0.75000	0.37895	0.37105
300	21	COL	2	1QT		1	3.25037	2.87272	0.377658
					PROB	1	0.96269	0.94648	0.01621
					PROB	2	0.03731	0.05352	-0.01621
301	21	COL	2	2QT		1	2.15466	2.05657	0.098099
					PROB	1	0.89610	0.88661	0.00949
					PROB	2	0.10390	0.11339	-0.00949
302	21	COL	2	3QT		1	2.30259	1.58004	0.722541
					PROB	1	0.90909	0.82921	0.07988
					PROB	2	0.09091	0.17079	-0.07988
303	21	COL	2	4QT		1	-0.133531	0.640035	-0.773566
					PROB	1	0.46667	0.65476	-0.18809
					PROB	2	0.53333	0.34524	0.18809
304	21	COL	3A	1QT		1	3.53125	3.00313	0.528116
					PROB	1	0.97156	0.95272	0.01885
					PROB	2	0.02844	0.04728	-0.01885
305	21	COL	3A	2QT		1	2.00373	2.18698	-0.183254
					PROB	1	0.88119	0.89907	-0.01789
					PROB	2	0.11881	0.10093	0.01789

DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE GRDSTA	MEN	TDEP	RESPONSE	ACTUAL	PREDICTED	RESIDUAL
306	21 COL	3A	3QT	1	2.28578	1.71046	0.575316
				PROB 1	0.90769	0.84690	0.06080
				PROB 2	0.09231	0.15310	-0.06080
307	21 COL	3A	4QT	1	-0.17185	0.770453	-0.942303
				PROB 1	0.45714	0.68362	-0.22648
				PROB 2	0.54286	0.31638	0.22648
308	21 COL	3B	1QT	1	3.29328	3.0771	0.216177
				PROB 1	0.96420	0.95594	0.00826
				PROB 2	0.03580	0.04406	-0.00826
309	21 COL	3B	2QT	1	2.12026	2.26095	-0.140689
				PROB 1	0.89286	0.90559	-0.01273
				PROB 2	0.10714	0.09441	0.01273
310	21 COL	3B	3QT	1	1.89712	1.78443	0.11269
				PROB 1	0.86957	0.85624	0.01332
				PROB 2	0.13043	0.14376	-0.01332
311	21 COL	3B	4QT	1	0.913007	0.844421	0.0685855
				PROB 1	0.71362	0.69940	0.01422
				PROB 2	0.28638	0.30060	-0.01422
312	21 COL	4	1QT	1	2.86388	3.06633	-0.202449
				PROB 1	0.94603	0.95548	-0.00945
				PROB 2	0.05397	0.04452	0.00945
313	21 COL	4	2QT	1	2.74084	2.25018	0.490661
				PROB 1	0.93939	0.90467	0.03473
				PROB 2	0.06061	0.09533	-0.03473
314	21 COL	4	3QT	1	1.49165	1.77366	-0.282002
				PROB 1	0.81633	0.85491	-0.03859
				PROB 2	0.18367	0.14509	0.03859
315	21 COL	4	4QT	1	0.417735	0.833648	-0.415913
				PROB 1	0.60294	0.69713	-0.09418
				PROB 2	0.39706	0.30287	0.09418
316	21 HSDG	1	1QT	1	2.93835	2.72778	0.210566
				PROB 1	0.94971	0.93865	0.01106
				PROB 2	0.05029	0.06135	-0.01106
317	21 HSDG	1	2QT	1	2.09917	1.91163	0.187542
				PROB 1	0.89082	0.87120	0.01962
				PROB 2	0.10918	0.12880	-0.01962
318	21 HSDG	1	3QT	1	1.62886	1.43511	0.193747
				PROB 1	0.83601	0.80770	0.02832
				PROB 2	0.16399	0.19230	-0.02832
319	21 HSDG	1	4QT	1	1.24653	0.4951	0.751432
				PROB 1	0.77670	0.62131	0.15539
				PROB 2	0.22330	0.37869	-0.15539
320	21 HSDG	2	1QT	1	3.10635	2.87383	0.232521
				PROB 1	0.95715	0.94654	0.01062

DESIGN				RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	2	0.04285	0.05346	-0.01062
321	21	HSDG	2	2QT		1	1.95458	2.05767	-0.103092
					PROB	1	0.87595	0.88672	-0.01078
					PROB	2	0.12405	0.11328	0.01078
322	21	HSDG	2	3QT		1	1.51082	1.58115	-0.0703352
					PROB	1	0.81918	0.82937	-0.01019
					PROB	2	0.18082	0.17063	0.01019
323	21	HSDG	2	4QT		1	0.37663	0.641144	-0.264514
					PROB	1	0.59306	0.65501	-0.06195
					PROB	2	0.40694	0.34499	0.06195
324	21	HSDG	3A	1QT		1	3.07739	3.00424	0.0731497
					PROB	1	0.95595	0.95277	0.00319
					PROB	2	0.04405	0.04723	-0.00319
325	21	HSDG	3A	2QT		1	2.07084	2.18809	-0.11725
					PROB	1	0.88804	0.89918	-0.01114
					PROB	2	0.11196	0.10082	0.01114
326	21	HSDG	3A	3QT		1	1.74496	1.71157	0.0333874
					PROB	1	0.85132	0.84704	0.00428
					PROB	2	0.14868	0.15296	-0.00428
327	21	HSDG	3A	4QT		1	0.44895	0.771562	-0.322612
					PROB	1	0.61039	0.68386	-0.07347
					PROB	2	0.38961	0.31614	0.07347
328	21	HSDG	3B	1QT		1	3.22027	3.07821	0.142061
					PROB	1	0.96159	0.95598	0.00561
					PROB	2	0.03841	0.04402	-0.00561
329	21	HSDG	3B	2QT		1	2.32287	2.26206	0.0608138
					PROB	1	0.91075	0.90569	0.00507
					PROB	2	0.08925	0.09431	-0.00507
330	21	HSDG	3B	3QT		1	1.72753	1.78554	-0.0580088
					PROB	1	0.84910	0.85638	-0.00728
					PROB	2	0.15090	0.14362	0.00728
331	21	HSDG	3B	4QT		1	0.694217	0.84553	-0.151313
					PROB	1	0.66690	0.69963	-0.03272
					PROB	2	0.33310	0.30037	0.03272
332	21	HSDG	4	1QT		1	3.72655	3.06744	0.659115
					PROB	1	0.97649	0.95553	0.02096
					PROB	2	0.02351	0.04447	-0.02096
333	21	HSDG	4	2QT		1	2.48491	2.25129	0.233619
					PROB	1	0.92308	0.90476	0.01832
					PROB	2	0.07692	0.09524	-0.01832
334	21	HSDG	4	3QT		1	1.71807	1.77477	-0.0566943
					PROB	1	0.84788	0.85505	-0.00717
					PROB	2	0.15212	0.14495	0.00717
335	21	HSDG	4	4QT		1	0.676887	0.834757	-0.15787

DESIGN					RESPONSE FUNCTION				
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
					PROB	1	0.66304	0.69736	-0.03432
					PROB	2	0.33696	0.30264	0.03432
336	21	NONGRD	1	1QT		1	1.42712	2.20023	-0.773111
					PROB	1	0.80645	0.90027	-0.09382
					PROB	2	0.19355	0.09973	0.09382
337	21	NONGRD	1	2QT		1	1.55814	1.38408	0.174067
					PROB	1	0.82609	0.79965	0.02644
					PROB	2	0.17391	0.20035	-0.02644
338	21	NONGRD	1	3QT		1	1.0116	0.907555	0.104045
					PROB	1	0.73333	0.71250	0.02083
					PROB	2	0.26667	0.28750	-0.02083
339	21	NONGRD	1	4QT		1	-0.916291	-0.0324538	-0.883837
					PROB	1	0.28571	0.49189	-0.20617
					PROB	2	0.71429	0.50811	0.20617
340	21	NONGRD	2	1QT		1	2.28153	2.34627	-0.0647397
					PROB	1	0.90734	0.91264	-0.00530
					PROB	2	0.09266	0.08736	0.00530
341	21	NONGRD	2	2QT		1	1.26025	1.53012	-0.269867
					PROB	1	0.77907	0.82202	-0.04295
					PROB	2	0.22093	0.17798	0.04295
342	21	NONGRD	2	3QT		1	0.955511	1.0536	-0.0980877
					PROB	1	0.72222	0.74147	-0.01924
					PROB	2	0.27778	0.25853	0.01924
343	21	NONGRD	2	4QT		1	0.127833	0.11359	0.0142435
					PROB	1	0.53191	0.52837	0.00355
					PROB	2	0.46809	0.47163	-0.00355
344	21	NONGRD	3A	1QT		1	2.74084	2.47669	0.264151
					PROB	1	0.93939	0.92249	0.01690
					PROB	2	0.06061	0.07751	-0.01690
345	21	NONGRD	3A	2QT		1	1.72988	1.66054	0.0693453
					PROB	1	0.84940	0.84031	0.00909
					PROB	2	0.15060	0.15969	-0.00909
346	21	NONGRD	3A	3QT		1	0.925769	1.18402	-0.258248
					PROB	1	0.71622	0.76567	-0.04945
					PROB	2	0.28378	0.23433	0.04945
347	21	NONGRD	3A	4QT		1	-0.0377403	0.244008	-0.281748
					PROB	1	0.49057	0.56070	-0.07014
					PROB	2	0.50943	0.43930	0.07014
348	21	NONGRD	3B	1QT		1	2.76278	2.55066	0.212118
					PROB	1	0.94063	0.92762	0.01301
					PROB	2	0.05937	0.07238	-0.01301
349	21	NONGRD	3B	2QT		1	1.56815	1.73451	-0.166359
					PROB	1	0.82752	0.84999	-0.02247
					PROB	2	0.17248	0.15001	0.02247

	DESIGN				RESPONSE FUNCTION			
SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
350	21	NONGRD	3B	3QT		1	1.08931	1.25799	-0.168675
					PROB	1	0.74825	0.77868	-0.03043
					PROB	2	0.25175	0.22132	0.03043
351	21	NONGRD	3B	4QT		1	0.340326	0.317976	0.0223498
					PROB	1	0.58427	0.57883	0.00544
					PROB	2	0.41573	0.42117	-0.00544
352	21	NONGRD	4	1QT		1	2.76212	2.53988	0.222233
					PROB	1	0.94059	0.92689	0.01370
					PROB	2	0.05941	0.07311	-0.01370
353	21	NONGRD	4	2QT		1	1.17007	1.72373	-0.553663
					PROB	1	0.76316	0.84861	-0.08545
					PROB	2	0.23684	0.15139	0.08545
354	21	NONGRD	4	3QT		1	2.15948	1.24721	0.912272
					PROB	1	0.89655	0.77682	0.11973
					PROB	2	0.10345	0.22318	-0.11973
355	21	NONGRD	4	4QT		1	0.77319	0.307203	0.465987
					PROB	1	0.68421	0.57620	0.10801
					PROB	2	0.31579	0.42380	-0.10801
356	21	SENIOR	1	1QT		1	2.63906	2.82833	-0.189272
					PROB	1	1.00000	0.94419	0.05581
					PROB	2	0.00000	0.05581	-0.05581
357	21	SENIOR	1	2QT		1	0.405465	2.01218	-1.60671
					PROB	1	0.60000	0.88207	-0.28207
					PROB	2	0.40000	0.11793	0.28207
358	21	SENIOR	1	3QT		1	0	1.53566	-1.53566
					PROB	1	0.50000	0.82283	-0.32283
					PROB	2	0.50000	0.17717	0.32283
359	21	SENIOR	1	4QT		1	0.405465	0.595648	-0.190183
					PROB	1	0.60000	0.64466	-0.04466
					PROB	2	0.40000	0.35534	0.04466
360	21	SENIOR	2	1QT		1	1.8718	2.97437	-1.10257
					PROB	1	0.86667	0.95140	-0.08474
					PROB	2	0.13333	0.04860	0.08474
361	21	SENIOR	2	2QT		1	1.70475	2.15822	-0.453475
					PROB	1	0.84615	0.89643	-0.05028
					PROB	2	0.15385	0.10357	0.05028
362	21	SENIOR	2	3QT		1	2.0149	1.6817	0.333202
					PROB	1	0.88235	0.84313	0.03922
					PROB	2	0.11765	0.15687	-0.03922
363	21	SENIOR	2	4QT		1	-0.81093	0.741692	-1.55262
					PROB	1	0.30769	0.67737	-0.36967
					PROB	2	0.69231	0.32263	0.36967
364	21	SENIOR	3A	1QT		1	3.09104	3.10479	-0.0137489
					PROB	1	0.95652	0.95709	-0.00057

	DESIGN				RESPONSE FUNCTION				
	SAMPLE	AGE	GRDSTA	MEN	TDEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
						PROB	2	0.04348	0.04291	0.00057
	365	21	SENIOR	3A	2QT		1	2.99573	2.28864	0.707091
						PROB	1	1.00000	0.90793	0.09207
						PROB	2	0.00000	0.09207	-0.09207
	366	21	SENIOR	3A	3QT		1	1.79176	1.81212	-0.0203596
						PROB	1	0.85714	0.85962	-0.00247
						PROB	2	0.14286	0.14038	0.00247
	367	21	SENIOR	3A	4QT		1	1.09861	0.87211	0.226502
						PROB	1	0.75000	0.70518	0.04482
						PROB	2	0.25000	0.29482	-0.04482
	368	21	SENIOR	3B	1QT		1	4.09434	3.17876	0.915585
						PROB	1	1.00000	0.96003	0.03997
						PROB	2	0.00000	0.03997	-0.03997
	369	21	SENIOR	3B	2QT		1	1.32176	2.36261	-1.04085
						PROB	1	0.78947	0.91393	-0.12446
						PROB	2	0.21053	0.08607	0.12446
	370	21	SENIOR	3B	3QT		1	1.38629	1.88609	-0.499793
						PROB	1	0.80000	0.86831	-0.06831
						PROB	2	0.20000	0.13169	0.06831
	371	21	SENIOR	3B	4QT		1	1.0116	0.946078	0.0655229
						PROB	1	0.73333	0.72033	0.01301
						PROB	2	0.26667	0.27967	-0.01301
	372	21	SENIOR	4	1QT		1	0.693147	3.16799	-2.47484
						PROB	1	1.00000	0.95961	0.04039
						PROB	2	0.00000	0.04039	-0.04039
	373	21	SENIOR	4	2QT		1	-0.693147	2.35184	-3.04498
EMPTY CELL										
						PROB	1	0.00000	0.91308	-0.91308
						PROB	2	1.00000	0.08692	0.91308
	374	21	SENIOR	4	3QT		1	0.693147	1.87531	-1.18217
						PROB	1	1.00000	0.86707	0.13293
						PROB	2	0.00000	0.13293	-0.13293

APPENDIX D

ACTUAL AND PREDICTED ATTRITION AND RESIDUALS

FOR EACH CELL OF MODEL IV

SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
1	33001-40	1	1		1	3.7832	3.82207	-0.0388682
				PROB	1	0.97776	0.97859	-0.00083
				PROB	2	0.02224	0.02141	0.00083
2	33001-40	1	2		1	3.22773	3.51523	-0.287507
				PROB	1	0.96186	0.97112	-0.00925
				PROB	2	0.03814	0.02888	0.00925
3	33001-40	1	3		1	3.157	3.27613	-0.119128
				PROB	1	0.95918	0.96360	-0.00442
				PROB	2	0.04082	0.03640	0.00442
4	33001-40	1	4		1	2.85948	3.00889	-0.149418
				PROB	1	0.94581	0.95297	-0.00717
				PROB	2	0.05419	0.04703	0.00717
5	33001-40	1	5		1	2.66691	2.86184	-0.194934
				PROB	1	0.93505	0.94593	-0.01088
				PROB	2	0.06495	0.05407	0.01088
6	33001-40	1	6		1	2.90245	2.71104	0.191412
				PROB	1	0.94797	0.93767	0.01029
				PROB	2	0.05203	0.06233	-0.01029
7	33001-40	1	7		1	2.96776	2.65649	0.311265
				PROB	1	0.95110	0.93441	0.01669
				PROB	2	0.04890	0.06559	-0.01669
8	33001-40	1	8		1	2.89729	2.54703	0.350259
				PROB	1	0.94771	0.92737	0.02034
				PROB	2	0.05229	0.07263	-0.02034
9	33001-40	1	9		1	2.52072	2.37643	0.144288
				PROB	1	0.92558	0.91501	0.01057
				PROB	2	0.07442	0.08499	-0.01057
10	33001-40	1	10		1	2.04435	2.20191	-0.157556
				PROB	1	0.88538	0.90042	-0.01505
				PROB	2	0.11462	0.09958	0.01505
11	33001-40	1	11		1	2.27065	1.90896	0.361691
				PROB	1	0.90642	0.87090	0.03551
				PROB	2	0.09358	0.12910	-0.03551
12	33001-40	1	12		1	1.27297	1.05388	0.21909
				PROB	1	0.78125	0.74152	0.03973
				PROB	2	0.21875	0.25848	-0.03973

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.98007	0.97900	0.00107
				PROB	2	0.01993	0.02100	-0.00107
14	33001-40	3	2		1	3.50706	3.53493	-0.0278728
				PROB	1	0.97089	0.97167	-0.00078
				PROB	2	0.02911	0.02833	0.00078
15	33001-40	3	3		1	2.8784	3.29583	-0.417432
				PROB	1	0.94677	0.96429	-0.01752
				PROB	2	0.05323	0.03571	0.01752
16	33001-40	3	4		1	2.94067	3.02859	-0.0879198
				PROB	1	0.94982	0.95385	-0.00403
				PROB	2	0.05018	0.04615	0.00403
17	33001-40	3	5		1	2.846	2.88154	-0.0355385
				PROB	1	0.94511	0.94693	-0.00181
				PROB	2	0.05489	0.05307	0.00181
18	33001-40	3	6		1	3.17632	2.73074	0.445579
				PROB	1	0.95993	0.93882	0.02112
				PROB	2	0.04007	0.06118	-0.02112
19	33001-40	3	7		1	2.86979	2.67619	0.193599
				PROB	1	0.94633	0.93561	0.01073
				PROB	2	0.05367	0.06439	-0.01073
20	33001-40	3	8		1	2.96646	2.56673	0.39973
				PROB	1	0.95104	0.92869	0.02235
				PROB	2	0.04896	0.07131	-0.02235
21	33001-40	3	9		1	2.61964	2.39613	0.223513
				PROB	1	0.93211	0.91653	0.01558
				PROB	2	0.06789	0.08347	-0.01558
22	33001-40	3	10		1	2.45196	2.2216	0.230358
				PROB	1	0.92070	0.90217	0.01853
				PROB	2	0.07930	0.09783	-0.01853
23	33001-40	3	11		1	2.17682	1.92866	0.248157
				PROB	1	0.89815	0.87310	0.02505
				PROB	2	0.10185	0.12690	-0.02505
24	33001-40	3	12		1	1.18562	1.07357	0.11205
				PROB	1	0.76596	0.74528	0.02068
				PROB	2	0.23404	0.25472	-0.02068
25	33001-40	4	1		1	3.50715	3.85434	-0.347196
				PROB	1	0.97089	0.97925	-0.00836
				PROB	2	0.02911	0.02075	0.00836
26	33001-40	4	2		1	3.346	3.5475	-0.201507
				PROB	1	0.96597	0.97201	-0.00604
				PROB	2	0.03403	0.02799	0.00604
27	33001-40	4	3		1	3.10707	3.3084	-0.201326
				PROB	1	0.95718	0.96472	-0.00753
				PROB	2	0.04282	0.03528	0.00753

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
28	33001-40	4	4		1	2.69046	3.04117	-0.350706
				PROB	1	0.93646	0.95440	-0.01794
				PROB	2	0.06354	0.04560	0.01794
29	33001-40	4	5		1	2.64743	2.89411	-0.246686
				PROB	1	0.93385	0.94755	-0.01370
				PROB	2	0.06615	0.05245	0.01370
30	33001-40	4	6		1	2.50144	2.74331	-0.241876
				PROB	1	0.92424	0.93953	-0.01529
				PROB	2	0.07576	0.06047	0.01529
31	33001-40	4	7		1	2.5696	2.68877	-0.119165
				PROB	1	0.92888	0.93636	-0.00748
				PROB	2	0.07112	0.06364	0.00748
32	33001-40	4	8		1	2.21006	2.57931	-0.369244
				PROB	1	0.90115	0.92952	-0.02837
				PROB	2	0.09885	0.07048	0.02837
33	33001-40	4	9		1	2.67906	2.4087	0.270362
				PROB	1	0.93578	0.91749	0.01829
				PROB	2	0.06422	0.08251	-0.01829
34	33001-40	4	10		1	2.19722	2.23418	-0.0369542
				PROB	1	0.90000	0.90328	-0.00328
				PROB	2	0.10000	0.09672	0.00328
35	33001-40	4	11		1	2.21213	1.94123	0.270895
				PROB	1	0.90133	0.87449	0.02685
				PROB	2	0.09867	0.12551	-0.02685
36	33001-40	4	12		1	1.78724	1.08615	0.701097
				PROB	1	0.85659	0.74766	0.10893
				PROB	2	0.14341	0.25234	-0.10893
37	33001-40	5	1		1	3.41508	3.82984	-0.414765
				PROB	1	0.96817	0.97875	-0.01058
				PROB	2	0.03183	0.02125	0.01058
38	33001-40	5	2		1	3.27645	3.52301	-0.246561
				PROB	1	0.96361	0.97134	-0.00772
				PROB	2	0.03639	0.02866	0.00772
39	33001-40	5	3		1	2.77689	3.2839	-0.507013
				PROB	1	0.94141	0.96387	-0.02246
				PROB	2	0.05859	0.03613	0.02246
40	33001-40	5	4		1	2.7322	3.01667	-0.284468
				PROB	1	0.93890	0.95332	-0.01442
				PROB	2	0.06110	0.04668	0.01442
41	33001-40	5	5		1	3.07487	2.86961	0.205256
				PROB	1	0.95584	0.94632	0.00952
				PROB	2	0.04416	0.05368	-0.00952
42	33001-40	5	6		1	2.33178	2.71881	-0.387029
				PROB	1	0.91148	0.93813	-0.02665

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.08852	0.06187	0.02665
43	33001-40	5	7		1	3.32424	2.66427	0.659968
				PROB	1	0.96525	0.93488	0.03037
				PROB	2	0.03475	0.06512	-0.03037
44	33001-40	5	8		1	2.58776	2.55481	0.0329561
				PROB	1	0.93007	0.92790	0.00217
				PROB	2	0.06993	0.07210	-0.00217
45	33001-40	5	9		1	2.14982	2.3842	-0.23438
				PROB	1	0.89565	0.91561	-0.01996
				PROB	2	0.10435	0.08439	0.01996
46	33001-40	5	10		1	2.79321	2.20968	0.583527
				PROB	1	0.94231	0.90112	0.04119
				PROB	2	0.05769	0.09888	-0.04119
47	33001-40	5	11		1	1.95571	1.91674	0.0389788
				PROB	1	0.87607	0.87177	0.00429
				PROB	2	0.12393	0.12823	-0.00429
48	33001-40	5	12		1	1.24225	1.06165	0.180605
				PROB	1	0.77596	0.74301	0.03295
				PROB	2	0.22404	0.25699	-0.03295
49	33001-40	7	1		1	3.60266	3.6383	-0.0356432
				PROB	1	0.97347	0.97438	-0.00091
				PROB	2	0.02653	0.02562	0.00091
50	33001-40	7	2		1	3.12556	3.33146	-0.205901
				PROB	1	0.95793	0.96549	-0.00756
				PROB	2	0.04207	0.03451	0.00756
51	33001-40	7	3		1	3.42589	3.09236	0.333529
				PROB	1	0.96850	0.95658	0.01193
				PROB	2	0.03150	0.04342	-0.01193
52	33001-40	7	4		1	2.89345	2.82513	0.0683274
				PROB	1	0.94752	0.94402	0.00350
				PROB	2	0.05248	0.05598	-0.00350
53	33001-40	7	5		1	2.53052	2.67807	-0.147554
				PROB	1	0.92625	0.93572	-0.00947
				PROB	2	0.07375	0.06428	0.00947
54	33001-40	7	6		1	2.44045	2.52727	-0.0868163
				PROB	1	0.91986	0.92603	-0.00617
				PROB	2	0.08014	0.07397	0.00617
55	33001-40	7	7		1	2.8094	2.47273	0.336677
				PROB	1	0.94318	0.92221	0.02097
				PROB	2	0.05682	0.07779	-0.02097
56	33001-40	7	8		1	2.23048	2.36327	-0.132784
				PROB	1	0.90295	0.91398	-0.01103
				PROB	2	0.09705	0.08602	0.01103
57	33001-40	7	9		1	2.45852	2.19266	0.26586

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.92118	0.89959	0.02159
				PROB	2	0.07882	0.10041	-0.02159
58	33001-40	7	10		1	2.07107	2.01814	0.0529349
				PROB	1	0.88806	0.88269	0.00537
				PROB	2	0.11194	0.11731	-0.00537
59	33001-40	7	11		1	1.93442	1.72519	0.209223
				PROB	1	0.87374	0.84880	0.02494
				PROB	2	0.12626	0.15120	-0.02494
60	33001-40	7	12		1	1.12847	0.870108	0.258358
				PROB	1	0.75556	0.70477	0.05079
				PROB	2	0.24444	0.29523	-0.05079
61	33001-40	8	1		1	3.41632	3.53016	-0.11384
				PROB	1	0.96821	0.97153	-0.00332
				PROB	2	0.03179	0.02847	0.00332
62	33001-40	8	2		1	3.27714	3.22332	0.0538216
				PROB	1	0.96364	0.96170	0.00193
				PROB	2	0.03636	0.03830	-0.00193
63	33001-40	8	3		1	2.4823	2.98422	-0.501921
				PROB	1	0.92289	0.95186	-0.02896
				PROB	2	0.07711	0.04814	0.02896
64	33001-40	8	4		1	2.31911	2.71698	-0.39787
				PROB	1	0.91045	0.93802	-0.02757
				PROB	2	0.08955	0.06198	0.02757
65	33001-40	8	5		1	2.47373	2.56993	-0.0961966
				PROB	1	0.92228	0.92890	-0.00662
				PROB	2	0.07772	0.07110	0.00662
66	33001-40	8	6		1	2.1529	2.41913	-0.266234
				PROB	1	0.89594	0.91827	-0.02234
				PROB	2	0.10406	0.08173	0.02234
67	33001-40	8	7		1	2.44235	2.36458	0.0777628
				PROB	1	0.92000	0.91409	0.00591
				PROB	2	0.08000	0.08591	-0.00591
68	33001-40	8	8		1	2.14658	2.25512	-0.108543
				PROB	1	0.89535	0.90509	-0.00974
				PROB	2	0.10465	0.09491	0.00974
69	33001-40	8	9		1	1.75209	2.08452	-0.332425
				PROB	1	0.85222	0.88939	-0.03717
				PROB	2	0.14778	0.11061	0.03717
70	33001-40	8	10		1	1.94591	1.91	0.0359131
				PROB	1	0.87500	0.87102	0.00398
				PROB	2	0.12500	0.12898	-0.00398
71	33001-40	8	11		1	1.78557	1.61705	0.168516
				PROB	1	0.85638	0.83439	0.02199
				PROB	2	0.14362	0.16561	-0.02199

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
72	33001-40	8	12		1	1.19392	0.761966	0.431956
				PROB	1	0.76744	0.68178	0.08566
				PROB	2	0.23256	0.31822	-0.08566
73	40001-47	1	1		1	3.43712	3.54256	-0.105444
				PROB	1	0.96884	0.97187	-0.00303
				PROB	2	0.03116	0.02813	0.00303
74	40001-47	1	2		1	3.28205	3.23573	0.046329
				PROB	1	0.96381	0.96216	0.00165
				PROB	2	0.03619	0.03784	-0.00165
75	40001-47	1	3		1	3.28341	2.99662	0.286792
				PROB	1	0.96386	0.95242	0.01143
				PROB	2	0.03614	0.04758	-0.01143
76	40001-47	1	4		1	2.80215	2.72939	0.0727601
				PROB	1	0.94279	0.93874	0.00405
				PROB	2	0.05721	0.06126	-0.00405
77	40001-47	1	5		1	2.8607	2.58233	0.278363
				PROB	1	0.94587	0.92972	0.01615
				PROB	2	0.05413	0.07028	-0.01615
78	40001-47	1	6		1	2.55019	2.43153	0.118656
				PROB	1	0.92759	0.91920	0.00839
				PROB	2	0.07241	0.08080	-0.00839
79	40001-47	1	7		1	2.30259	2.37699	-0.0744017
				PROB	1	0.90909	0.91506	-0.00596
				PROB	2	0.09091	0.08494	0.00596
80	40001-47	1	8		1	2.40968	2.26753	0.142156
				PROB	1	0.91756	0.90615	0.01141
				PROB	2	0.08244	0.09385	-0.01141
81	40001-47	1	9		1	2.20692	2.09692	0.110002
				PROB	1	0.90087	0.89060	0.01027
				PROB	2	0.09913	0.10940	-0.01027
82	40001-47	1	10		1	2.04533	1.9224	0.12293
				PROB	1	0.88547	0.87241	0.01307
				PROB	2	0.11453	0.12759	-0.01307
83	40001-47	1	11		1	1.65894	1.62945	0.0294843
				PROB	1	0.84010	0.83609	0.00400
				PROB	2	0.15990	0.16391	-0.00400
84	40001-47	1	12		1	0.781116	0.774369	0.00674705
				PROB	1	0.68592	0.68447	0.00146
				PROB	2	0.31408	0.31553	-0.00146
85	40001-47	3	1		1	4.00775	3.56226	0.445485
				PROB	1	0.98215	0.97241	0.00974
				PROB	2	0.01785	0.02759	-0.00974
86	40001-47	3	2		1	3.32415	3.25542	0.0687306
				PROB	1	0.96525	0.96287	0.00238

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.03475	0.03713	-0.00238
87	40001-47	3	3		1	3.12579	3.01632	0.109465
				PROB	1	0.95794	0.95331	0.00464
				PROB	2	0.04206	0.04669	-0.00464
88	40001-47	3	4		1	2.82511	2.74909	0.0760209
				PROB	1	0.94402	0.93986	0.00416
				PROB	2	0.05598	0.06014	-0.00416
89	40001-47	3	5		1	2.87168	2.60203	0.269649
				PROB	1	0.94643	0.93099	0.01544
				PROB	2	0.05357	0.06901	-0.01544
90	40001-47	3	6		1	2.35815	2.45123	-0.093076
				PROB	1	0.91358	0.92065	-0.00707
				PROB	2	0.08642	0.07935	0.00707
91	40001-47	3	7		1	2.36712	2.39669	-0.0295616
				PROB	1	0.91429	0.91657	-0.00229
				PROB	2	0.08571	0.08343	0.00229
92	40001-47	3	8		1	2.10095	2.28723	-0.186278
				PROB	1	0.89100	0.90781	-0.01682
				PROB	2	0.10900	0.09219	0.01682
93	40001-47	3	9		1	2.04446	2.11662	-0.0721583
				PROB	1	0.88539	0.89251	-0.00712
				PROB	2	0.11461	0.10749	0.00712
94	40001-47	3	10		1	2.22354	1.9421	0.281444
				PROB	1	0.90234	0.87458	0.02776
				PROB	2	0.09766	0.12542	-0.02776
95	40001-47	3	11		1	1.68808	1.64915	0.0389283
				PROB	1	0.84397	0.83878	0.00520
				PROB	2	0.15603	0.16122	-0.00520
96	40001-47	3	12		1	0.733969	0.794067	-0.0600982
				PROB	1	0.67568	0.68870	-0.01303
				PROB	2	0.32432	0.31130	0.01303
97	40001-47	4	1		1	3.28297	3.57484	-0.291868
				PROB	1	0.96384	0.97274	-0.00890
				PROB	2	0.03616	0.02726	0.00890
98	40001-47	4	2		1	3.0498	3.268	-0.218199
				PROB	1	0.95477	0.96331	-0.00854
				PROB	2	0.04523	0.03669	0.00854
99	40001-47	4	3		1	2.69828	3.02889	-0.330614
				PROB	1	0.93693	0.95386	-0.01694
				PROB	2	0.06307	0.04614	0.01694
100	40001-47	4	4		1	2.77009	2.76166	0.00842555
				PROB	1	0.94104	0.94057	0.00047
				PROB	2	0.05896	0.05943	-0.00047
101	40001-47	4	5		1	2.53093	2.61461	-0.0836727

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.92628	0.93180	-0.00551
				PROB	2	0.07372	0.06820	0.00551
102	40001-47	4	6		1	2.49741	2.46381	0.0336017
				PROB	1	0.92396	0.92157	0.00239
				PROB	2	0.07604	0.07843	-0.00239
103	40001-47	4	7		1	2.24404	2.40926	-0.165218
				PROB	1	0.90414	0.91753	-0.01340
				PROB	2	0.09586	0.08247	0.01340
104	40001-47	4	8		1	2.43636	2.2998	0.136562
				PROB	1	0.91956	0.90886	0.01070
				PROB	2	0.08044	0.09114	-0.01070
105	40001-47	4	9		1	1.98413	2.12919	-0.145063
				PROB	1	0.87912	0.89371	-0.01459
				PROB	2	0.12088	0.10629	0.01459
106	40001-47	4	10		1	1.74397	1.95467	-0.210704
				PROB	1	0.85119	0.87596	-0.02476
				PROB	2	0.14881	0.12404	0.02476
107	40001-47	4	11		1	2.01139	1.66173	0.349661
				PROB	1	0.88199	0.84047	0.04152
				PROB	2	0.11801	0.15953	-0.04152
108	40001-47	4	12		1	1.22561	0.806642	0.41897
				PROB	1	0.77305	0.69139	0.08166
				PROB	2	0.22695	0.30861	-0.08166
109	40001-47	5	1		1	3.46985	3.55034	-0.0804828
				PROB	1	0.96982	0.97209	-0.00227
				PROB	2	0.03018	0.02791	0.00227
110	40001-47	5	2		1	2.88921	3.2435	-0.354287
				PROB	1	0.94731	0.96244	-0.01513
				PROB	2	0.05269	0.03756	0.01513
111	40001-47	5	3		1	2.67495	3.0044	-0.329447
				PROB	1	0.93553	0.95277	-0.01724
				PROB	2	0.06447	0.04723	0.01724
112	40001-47	5	4		1	2.55886	2.73716	-0.178304
				PROB	1	0.92817	0.93918	-0.01102
				PROB	2	0.07183	0.06082	0.01102
113	40001-47	5	5		1	2.13739	2.59011	-0.452718
				PROB	1	0.89448	0.93022	-0.03574
				PROB	2	0.10552	0.06978	0.03574
114	40001-47	5	6		1	2.41036	2.43931	-0.0289507
				PROB	1	0.91761	0.91978	-0.00216
				PROB	2	0.08239	0.08022	0.00216
115	40001-47	5	7		1	2.32456	2.38476	-0.0601975
				PROB	1	0.91089	0.91566	-0.00477
				PROB	2	0.08911	0.08434	0.00477

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
116	40001-47	5	8		1	2.12141	2.2753	-0.153896
				PROB	1	0.89297	0.90681	-0.01384
				PROB	2	0.10703	0.09319	0.01384
117	40001-47	5	9		1	1.98983	2.1047	-0.114867
				PROB	1	0.87973	0.89136	-0.01163
				PROB	2	0.12027	0.10864	0.01163
118	40001-47	5	10		1	1.91537	1.93017	-0.014801
				PROB	1	0.87162	0.87327	-0.00165
				PROB	2	0.12838	0.12673	0.00165
119	40001-47	5	11		1	1.9521	1.63723	0.314873
				PROB	1	0.87568	0.83716	0.03852
				PROB	2	0.12432	0.16284	-0.03852
120	40001-47	5	12		1	1.59451	0.782144	0.812369
				PROB	1	0.83125	0.68614	0.14511
				PROB	2	0.16875	0.31386	-0.14511
121	40001-47	7	1		1	3.56742	3.3588	0.208623
				PROB	1	0.97255	0.96639	0.00615
				PROB	2	0.02745	0.03361	-0.00615
122	40001-47	7	2		1	2.82953	3.05196	-0.222428
				PROB	1	0.94425	0.95487	-0.01062
				PROB	2	0.05575	0.04513	0.01062
123	40001-47	7	3		1	2.99279	2.81285	0.179932
				PROB	1	0.95225	0.94337	0.00888
				PROB	2	0.04775	0.05663	-0.00888
124	40001-47	7	4		1	2.57884	2.54562	0.0332188
				PROB	1	0.92949	0.92728	0.00221
				PROB	2	0.07051	0.07272	-0.00221
125	40001-47	7	5		1	2.32834	2.39856	-0.0702271
				PROB	1	0.91120	0.91672	-0.00552
				PROB	2	0.08880	0.08328	0.00552
126	40001-47	7	6		1	2.42922	2.24776	0.181453
				PROB	1	0.91903	0.90446	0.01457
				PROB	2	0.08097	0.09554	-0.01457
127	40001-47	7	7		1	2.04898	2.19322	-0.144237
				PROB	1	0.88584	0.89964	-0.01379
				PROB	2	0.11416	0.10036	0.01379
128	40001-47	7	8		1	1.59263	2.08376	-0.491128
				PROB	1	0.83099	0.88931	-0.05833
				PROB	2	0.16901	0.11069	0.05833
129	40001-47	7	9		1	2.10625	1.91315	0.193099
				PROB	1	0.89151	0.87137	0.02014
				PROB	2	0.10849	0.12863	-0.02014
130	40001-47	7	10		1	1.4816	1.73863	-0.257027
				PROB	1	0.81481	0.85051	-0.03570

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.18519	0.14949	0.03570
131	40001-47	7	11		1	1.64581	1.44569	0.200119
				PROB	1	0.83832	0.80933	0.02899
				PROB	2	0.16168	0.19067	-0.02899
132	40001-47	7	12		1	0.834798	0.590601	0.244197
				PROB	1	0.69737	0.64350	0.05387
				PROB	2	0.30263	0.35650	-0.05387
133	40001-47	8	1		1	3.14903	3.25065	-0.101624
				PROB	1	0.95887	0.96270	-0.00383
				PROB	2	0.04113	0.03730	0.00383
134	40001-47	8	2		1	2.89755	2.94382	-0.0462691
				PROB	1	0.94773	0.94997	-0.00225
				PROB	2	0.05227	0.05003	0.00225
135	40001-47	8	3		1	2.72654	2.70471	0.0218316
				PROB	1	0.93857	0.93730	0.00127
				PROB	2	0.06143	0.06270	-0.00127
136	40001-47	8	4		1	2.31554	2.43748	-0.121934
				PROB	1	0.91016	0.91964	-0.00948
				PROB	2	0.08984	0.08036	0.00948
137	40001-47	8	5		1	2.26091	2.29042	-0.0295111
				PROB	1	0.90559	0.90808	-0.00249
				PROB	2	0.09441	0.09192	0.00249
138	40001-47	8	6		1	2.04694	2.13962	-0.0926811
				PROB	1	0.88564	0.89470	-0.00906
				PROB	2	0.11436	0.10530	0.00906
139	40001-47	8	7		1	2.06193	2.08508	-0.0231498
				PROB	1	0.88715	0.88944	-0.00230
				PROB	2	0.11285	0.11056	0.00230
140	40001-47	8	8		1	1.82748	1.97562	-0.14814
				PROB	1	0.86146	0.87821	-0.01675
				PROB	2	0.13854	0.12179	0.01675
141	40001-47	8	9		1	1.69893	1.80501	-0.106084
				PROB	1	0.84539	0.85876	-0.01336
				PROB	2	0.15461	0.14124	0.01336
142	40001-47	8	10		1	1.84583	1.63049	0.215336
				PROB	1	0.86364	0.83624	0.02740
				PROB	2	0.13636	0.16376	-0.02740
143	40001-47	8	11		1	1.42139	1.33755	0.0838404
				PROB	1	0.80556	0.79209	0.01347
				PROB	2	0.19444	0.20791	-0.01347
144	40001-47	8	12		1	0.739667	0.48246	0.257207
				PROB	1	0.67692	0.61833	0.05859
				PROB	2	0.32308	0.38167	-0.05859
145	47001-54	1	1		1	3.67883	3.6176	0.0612251

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.97537	0.97385	0.00151
				PROB	2	0.02463	0.02615	-0.00151
146	47001-54	1	2		1	3.91356	3.31077	0.602793
				PROB	1	0.98042	0.96480	0.01563
				PROB	2	0.01958	0.03520	-0.01563
147	47001-54	1	3		1	2.89037	3.07166	-0.181292
				PROB	1	0.94737	0.95571	-0.00834
				PROB	2	0.05263	0.04429	0.00834
148	47001-54	1	4		1	2.54693	2.80443	-0.257498
				PROB	1	0.92737	0.94291	-0.01555
				PROB	2	0.07263	0.05709	0.01555
149	47001-54	1	5		1	2.884	2.65737	0.226629
				PROB	1	0.94705	0.93446	0.01259
				PROB	2	0.05295	0.06554	-0.01259
150	47001-54	1	6		1	2.54012	2.50657	0.0335437
				PROB	1	0.92691	0.92460	0.00231
				PROB	2	0.07309	0.07540	-0.00231
151	47001-54	1	7		1	2.6644	2.45203	0.212375
				PROB	1	0.93489	0.92071	0.01418
				PROB	2	0.06511	0.07929	-0.01418
152	47001-54	1	8		1	2.27477	2.34257	-0.0677998
				PROB	1	0.90677	0.91234	-0.00558
				PROB	2	0.09323	0.08766	0.00558
153	47001-54	1	9		1	2.30536	2.17196	0.133396
				PROB	1	0.90932	0.89770	0.01162
				PROB	2	0.09068	0.10230	-0.01162
154	47001-54	1	10		1	2.14253	1.99744	0.145094
				PROB	1	0.89497	0.88053	0.01444
				PROB	2	0.10503	0.11947	-0.01444
155	47001-54	1	11		1	1.71024	1.7045	0.00574719
				PROB	1	0.84687	0.84612	0.00075
				PROB	2	0.15313	0.15388	-0.00075
156	47001-54	1	12		1	0.352355	0.84941	-0.497055
				PROB	1	0.58719	0.70044	-0.11325
				PROB	2	0.41281	0.29956	0.11325
157	47001-54	3	1		1	3.36198	3.6373	-0.275326
				PROB	1	0.96649	0.97435	-0.00786
				PROB	2	0.03351	0.02565	0.00786
158	47001-54	3	2		1	3.83945	3.33047	0.508987
				PROB	1	0.97895	0.96546	0.01349
				PROB	2	0.02105	0.03454	-0.01349
159	47001-54	3	3		1	3.2581	3.09136	0.166735
				PROB	1	0.96296	0.95654	0.00643
				PROB	2	0.03704	0.04346	-0.00643

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
160	47001-54	3	4		1	2.93835	2.82413	0.114221
				PROB	1	0.94971	0.94397	0.00574
				PROB	2	0.05029	0.05603	-0.00574
161	47001-54	3	5		1	2.65196	2.67707	-0.0251114
				PROB	1	0.93413	0.93566	-0.00153
				PROB	2	0.06587	0.06434	0.00153
162	47001-54	3	6		1	2.58854	2.52627	0.0622694
				PROB	1	0.93012	0.92596	0.00416
				PROB	2	0.06988	0.07404	-0.00416
163	47001-54	3	7		1	2.46243	2.47173	-.00929259
				PROB	1	0.92147	0.92214	-0.00067
				PROB	2	0.07853	0.07786	0.00067
164	47001-54	3	8		1	2.38796	2.36227	0.0256983
				PROB	1	0.91590	0.91390	0.00200
				PROB	2	0.08410	0.08610	-0.00200
165	47001-54	3	9		1	2.25624	2.19166	0.0645835
				PROB	1	0.90519	0.89950	0.00569
				PROB	2	0.09481	0.10050	-0.00569
166	47001-54	3	10		1	2.08278	2.01714	0.0656449
				PROB	1	0.88922	0.88258	0.00663
				PROB	2	0.11078	0.11742	-0.00663
167	47001-54	3	11		1	1.64347	1.72419	-0.0807262
				PROB	1	0.83801	0.84867	-0.01066
				PROB	2	0.16199	0.15133	0.01066
168	47001-54	3	12		1	0.579573	0.869109	-0.289535
				PROB	1	0.64097	0.70456	-0.06359
				PROB	2	0.35903	0.29544	0.06359
169	47001-54	4	1		1	3.91202	3.64988	0.262146
				PROB	1	0.98039	0.97466	0.00573
				PROB	2	0.01961	0.02534	-0.00573
170	47001-54	4	2		1	3.07577	3.34304	-0.267264
				PROB	1	0.95588	0.96588	-0.00999
				PROB	2	0.04412	0.03412	0.00999
171	47001-54	4	3		1	3.3162	3.10394	0.212268
				PROB	1	0.96498	0.95705	0.00793
				PROB	2	0.03502	0.04295	-0.00793
172	47001-54	4	4		1	2.67069	2.8367	-0.166007
				PROB	1	0.93528	0.94463	-0.00935
				PROB	2	0.06472	0.05537	0.00935
173	47001-54	4	5		1	2.53848	2.68965	-0.151169
				PROB	1	0.92680	0.93641	-0.00962
				PROB	2	0.07320	0.06359	0.00962
174	47001-54	4	6		1	2.33237	2.53885	-0.206477
				PROB	1	0.91152	0.92682	-0.01530

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.08848	0.07318	0.01530
175	47001-54	4	7		1	2.49331	2.4843	0.00900951
				PROB	1	0.92367	0.92303	0.00064
				PROB	2	0.07633	0.07697	-0.00064
176	47001-54	4	8		1	2.4043	2.37484	0.0294621
				PROB	1	0.91715	0.91489	0.00227
				PROB	2	0.08285	0.08511	-0.00227
177	47001-54	4	9		1	2.39874	2.20424	0.194501
				PROB	1	0.91673	0.90063	0.01610
				PROB	2	0.08327	0.09937	-0.01610
178	47001-54	4	10		1	2.15761	2.02971	0.127893
				PROB	1	0.89638	0.88388	0.01250
				PROB	2	0.10362	0.11612	-0.01250
179	47001-54	4	11		1	1.7764	1.73677	0.039636
				PROB	1	0.85525	0.85028	0.00498
				PROB	2	0.14475	0.14972	-0.00498
180	47001-54	4	12		1	1.01758	0.881683	0.135899
				PROB	1	0.73450	0.70717	0.02733
				PROB	2	0.26550	0.29283	-0.02733
181	47001-54	5	1		1	5.2832	3.62538	1.65783
				PROB	1	0.99495	0.97405	0.02090
				PROB	2	0.00505	0.02595	-0.02090
182	47001-54	5	2		1	4.04305	3.31854	0.72451
				PROB	1	0.98276	0.96506	0.01770
				PROB	2	0.01724	0.03494	-0.01770
183	47001-54	5	3		1	3.24177	3.07944	0.162332
				PROB	1	0.96238	0.95604	0.00634
				PROB	2	0.03762	0.04396	-0.00634
184	47001-54	5	4		1	2.95751	2.8122	0.145308
				PROB	1	0.95062	0.94333	0.00729
				PROB	2	0.04938	0.05667	-0.00729
185	47001-54	5	5		1	2.64921	2.66515	-0.0159386
				PROB	1	0.93396	0.93494	-0.00098
				PROB	2	0.06604	0.06506	0.00098
186	47001-54	5	6		1	2.6529	2.51435	0.13855
				PROB	1	0.93419	0.92514	0.00905
				PROB	2	0.06581	0.07486	-0.00905
187	47001-54	5	7		1	2.49355	2.4598	0.0337471
				PROB	1	0.92369	0.92128	0.00241
				PROB	2	0.07631	0.07872	-0.00241
188	47001-54	5	8		1	2.33097	2.35034	-0.0193762
				PROB	1	0.91141	0.91296	-0.00155
				PROB	2	0.08859	0.08704	0.00155
189	47001-54	5	9		1	2.14771	2.17974	-0.032028

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.89545	0.89842	-0.00296
				PROB	2	0.10455	0.10158	0.00296
190	47001-54	5	10		1	2.07675	2.00522	0.0715342
				PROB	1	0.88862	0.88134	0.00728
				PROB	2	0.11138	0.11866	-0.00728
191	47001-54	5	11		1	1.83157	1.71227	0.119302
				PROB	1	0.86195	0.84713	0.01482
				PROB	2	0.13805	0.15287	-0.01482
192	47001-54	5	12		1	1.34835	0.857185	0.491165
				PROB	1	0.79386	0.70207	0.09179
				PROB	2	0.20614	0.29793	-0.09179
193	47001-54	7	1		1	3.8221	3.43384	0.388262
				PROB	1	0.97859	0.96875	0.00984
				PROB	2	0.02141	0.03125	-0.00984
194	47001-54	7	2		1	3.52391	3.127	0.396907
				PROB	1	0.97136	0.95799	0.01337
				PROB	2	0.02864	0.04201	-0.01337
195	47001-54	7	3		1	3.20923	2.8879	0.321334
				PROB	1	0.96118	0.94724	0.01394
				PROB	2	0.03882	0.05276	-0.01394
196	47001-54	7	4		1	2.54845	2.62066	-0.0722135
				PROB	1	0.92747	0.93218	-0.00471
				PROB	2	0.07253	0.06782	0.00471
197	47001-54	7	5		1	2.67743	2.47361	0.203821
				PROB	1	0.93568	0.92227	0.01341
				PROB	2	0.06432	0.07773	-0.01341
198	47001-54	7	6		1	2.40508	2.32281	0.0822785
				PROB	1	0.91721	0.91075	0.00647
				PROB	2	0.08279	0.08925	-0.00647
199	47001-54	7	7		1	2.22498	2.26826	-0.0432763
				PROB	1	0.90247	0.90621	-0.00374
				PROB	2	0.09753	0.09379	0.00374
200	47001-54	7	8		1	2.03604	2.1588	-0.122763
				PROB	1	0.88453	0.89649	-0.01196
				PROB	2	0.11547	0.10351	0.01196
201	47001-54	7	9		1	2.18792	1.9882	0.199727
				PROB	1	0.89916	0.87955	0.01961
				PROB	2	0.10084	0.12045	-0.01961
202	47001-54	7	10		1	1.71891	1.81367	-0.0947654
				PROB	1	0.84799	0.85981	-0.01182
				PROB	2	0.15201	0.14019	0.01182
203	47001-54	7	11		1	1.32799	1.52073	-0.192741
				PROB	1	0.79051	0.82065	-0.03014
				PROB	2	0.20949	0.17935	0.03014

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
204	47001-54	7	12		1	0.195249	0.665642	-0.470393
				PROB	1	0.54866	0.66053	-0.11187
				PROB	2	0.45134	0.33947	0.11187
205	47001-54	8	1		1	2.9374	3.32569	-0.388298
				PROB	1	0.94966	0.96530	-0.01564
				PROB	2	0.05034	0.03470	0.01564
206	47001-54	8	2		1	2.87721	3.01886	-0.141644
				PROB	1	0.94671	0.95342	-0.00671
				PROB	2	0.05329	0.04658	0.00671
207	47001-54	8	3		1	2.47914	2.77975	-0.300611
				PROB	1	0.92267	0.94157	-0.01891
				PROB	2	0.07733	0.05843	0.01891
208	47001-54	8	4		1	2.19375	2.51252	-0.318773
				PROB	1	0.89969	0.92501	-0.02533
				PROB	2	0.10031	0.07499	0.02533
209	47001-54	8	5		1	2.22848	2.36546	-0.136987
				PROB	1	0.90278	0.91416	-0.01138
				PROB	2	0.09722	0.08584	0.01138
210	47001-54	8	6		1	2.22732	2.21466	0.012658
				PROB	1	0.90268	0.90156	0.00112
				PROB	2	0.09732	0.09844	-0.00112
211	47001-54	8	7		1	2.17222	2.16012	0.0121044
				PROB	1	0.89773	0.89661	0.00112
				PROB	2	0.10227	0.10339	-0.00112
212	47001-54	8	8		1	2.19413	2.05066	0.143474
				PROB	1	0.89972	0.88601	0.01371
				PROB	2	0.10028	0.11399	-0.01371
213	47001-54	8	9		1	1.93007	1.88005	0.0500173
				PROB	1	0.87326	0.86762	0.00564
				PROB	2	0.12674	0.13238	-0.00564
214	47001-54	8	10		1	1.91378	1.70553	0.208252
				PROB	1	0.87144	0.84626	0.02519
				PROB	2	0.12856	0.15374	-0.02519
215	47001-54	8	11		1	1.72511	1.41259	0.312524
				PROB	1	0.84879	0.80417	0.04461
				PROB	2	0.15121	0.19583	-0.04461
216	47001-54	8	12		1	0.507087	0.557501	-0.0504137
				PROB	1	0.62412	0.63587	-0.01175
				PROB	2	0.37588	0.36413	0.01175
217	54001-61	1	1		1	3.56378	3.33393	0.229843
				PROB	1	0.97245	0.96557	0.00687
				PROB	2	0.02755	0.03443	-0.00687
218	54001-61	1	2		1	3.17511	3.0271	0.148011
				PROB	1	0.95989	0.95378	0.00610

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	2	0.04011	0.04622	-0.00610
219	54001-61	1	3		1	2.75218	2.78799	-0.0358144
				PROB	1	0.94004	0.94202	-0.00199
				PROB	2	0.05996	0.05798	0.00199
220	54001-61	1	4		1	2.72919	2.52076	0.208433
				PROB	1	0.93873	0.92558	0.01314
				PROB	2	0.06127	0.07442	-0.01314
221	54001-61	1	5		1	2.45638	2.3737	0.082674
				PROB	1	0.92103	0.91480	0.00623
				PROB	2	0.07897	0.08520	-0.00623
222	54001-61	1	6		1	2.18971	2.2229	-0.0331989
				PROB	1	0.89932	0.90229	-0.00297
				PROB	2	0.10068	0.09771	0.00297
223	54001-61	1	7		1	2.11021	2.16836	-0.0581457
				PROB	1	0.89189	0.89737	-0.00548
				PROB	2	0.10811	0.10263	0.00548
224	54001-61	1	8		1	2.26272	2.0589	0.203822
				PROB	1	0.90574	0.88684	0.01890
				PROB	2	0.09426	0.11316	-0.01890
225	54001-61	1	9		1	2.10497	1.88829	0.216681
				PROB	1	0.89139	0.86856	0.02282
				PROB	2	0.10861	0.13144	-0.02282
226	54001-61	1	10		1	1.53033	1.71377	-0.183438
				PROB	1	0.82206	0.84732	-0.02527
				PROB	2	0.17794	0.15268	0.02527
227	54001-61	1	11		1	1.18523	1.42083	-0.2356
				PROB	1	0.76589	0.80547	-0.03958
				PROB	2	0.23411	0.19453	0.03958
228	54001-61	1	12		1	0.496628	0.565741	-0.0691126
				PROB	1	0.62167	0.63778	-0.01611
				PROB	2	0.37833	0.36222	0.01611
229	54001-61	3	1		1	3.89182	3.35363	0.538187
				PROB	1	0.98000	0.96622	0.01378
				PROB	2	0.02000	0.03378	-0.01378
230	54001-61	3	2		1	3.61261	3.0468	0.565809
				PROB	1	0.97373	0.95464	0.01908
				PROB	2	0.02627	0.04536	-0.01908
231	54001-61	3	3		1	2.96111	2.80769	0.153419
				PROB	1	0.95079	0.94309	0.00770
				PROB	2	0.04921	0.05691	-0.00770
232	54001-61	3	4		1	2.82381	2.54046	0.283353
				PROB	1	0.94395	0.92693	0.01702
				PROB	2	0.05605	0.07307	-0.01702
233	54001-61	3	5		1	2.32612	2.3934	-0.0672875

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
				PROB	1	0.91102	0.91632	-0.00531
				PROB	2	0.08898	0.08368	0.00531
234	54001-61	3	6		1	2.14706	2.2426	-0.0955458
				PROB	1	0.89539	0.90401	-0.00862
				PROB	2	0.10461	0.09599	0.00862
235	54001-61	3	7		1	2.12565	2.18806	-0.062403
				PROB	1	0.89337	0.89917	-0.00580
				PROB	2	0.10663	0.10083	0.00580
236	54001-61	3	8		1	2.01177	2.0786	-0.0668242
				PROB	1	0.88203	0.88881	-0.00678
				PROB	2	0.11797	0.11119	0.00678
237	54001-61	3	9		1	1.67237	1.90799	-0.23562
				PROB	1	0.84189	0.87079	-0.02890
				PROB	2	0.15811	0.12921	0.02890
238	54001-61	3	10		1	1.54954	1.73347	-0.18393
				PROB	1	0.82485	0.84986	-0.02501
				PROB	2	0.17515	0.15014	0.02501
239	54001-61	3	11		1	1.10539	1.44052	-0.335133
				PROB	1	0.75127	0.80854	-0.05727
				PROB	2	0.24873	0.19146	0.05727
240	54001-61	3	12		1	0.35948	0.585439	-0.225959
				PROB	1	0.58891	0.64232	-0.05340
				PROB	2	0.41109	0.35768	0.05340
241	54001-61	4	1		1	3.4164	3.36621	0.050189
				PROB	1	0.96821	0.96663	0.00158
				PROB	2	0.03179	0.03337	-0.00158
242	54001-61	4	2		1	2.97793	3.05937	-0.0814428
				PROB	1	0.95157	0.95519	-0.00362
				PROB	2	0.04843	0.04481	0.00362
243	54001-61	4	3		1	3.09975	2.82027	0.279479
				PROB	1	0.95688	0.94376	0.01312
				PROB	2	0.04312	0.05624	-0.01312
244	54001-61	4	4		1	2.63493	2.55303	0.0818958
				PROB	1	0.93308	0.92778	0.00530
				PROB	2	0.06692	0.07222	-0.00530
245	54001-61	4	5		1	2.47681	2.40598	0.0708322
				PROB	1	0.92250	0.91728	0.00522
				PROB	2	0.07750	0.08272	-0.00522
246	54001-61	4	6		1	2.42954	2.25518	0.174363
				PROB	1	0.91905	0.90510	0.01396
				PROB	2	0.08095	0.09490	-0.01396
247	54001-61	4	7		1	2.07379	2.20063	-0.126837
				PROB	1	0.88833	0.90031	-0.01198
				PROB	2	0.11167	0.09969	0.01198

DESIGN				RESPONSE FUNCTION				
SAMPLE	DEPSIZE	AREA	MODEP	RESPONSE		ACTUAL	PREDICTED	RESIDUAL
248	54001-61	4	8		1	2.11324	2.09117	0.0220674
				PROB	1	0.89218	0.89004	0.00214
				PROB	2	0.10782	0.10996	-0.00214
249	54001-61	4	9		1	1.86989	1.92057	-0.0506732
				PROB	1	0.86645	0.87220	-0.00576
				PROB	2	0.13355	0.12780	0.00576
250	54001-61	4	10		1	1.60286	1.74604	-0.143185
				PROB	1	0.83242	0.85145	-0.01904
				PROB	2	0.16758	0.14855	0.01904
251	54001-61	4	11		1	1.24642	1.4531	-0.206677
				PROB	1	0.77668	0.81047	-0.03380
				PROB	2	0.22332	0.18953	0.03380
252	54001-61	4	12		1	0.929344	0.598014	0.33133
				PROB	1	0.71694	0.64520	0.07174
				PROB	2	0.28306	0.35480	-0.07174
254	54001-61	5	2		1	3.06139	3.03487	0.0265138
				PROB	2	0.07757	0.07388	0.00368
				PROB	1	0.87879	0.89809	-0.01930
262	54001-61	5	10		1	1.44548	1.72155	-0.276063
				PROB	2	0.27114	0.36043	-0.08929
				PROB	1	0.94553	0.93113	0.01440
270	54001-61	7	6		1	2.14683	2.03914	0.107694
				PROB	2	0.19156	0.15388	0.03768
279	54001-61	8	3		1	2.61543	2.49609	0.119343
				PROB	1	0.85393	0.85408	-0.00015

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